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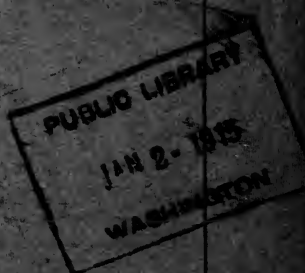
HOUSE OF REPRESENTATIVES

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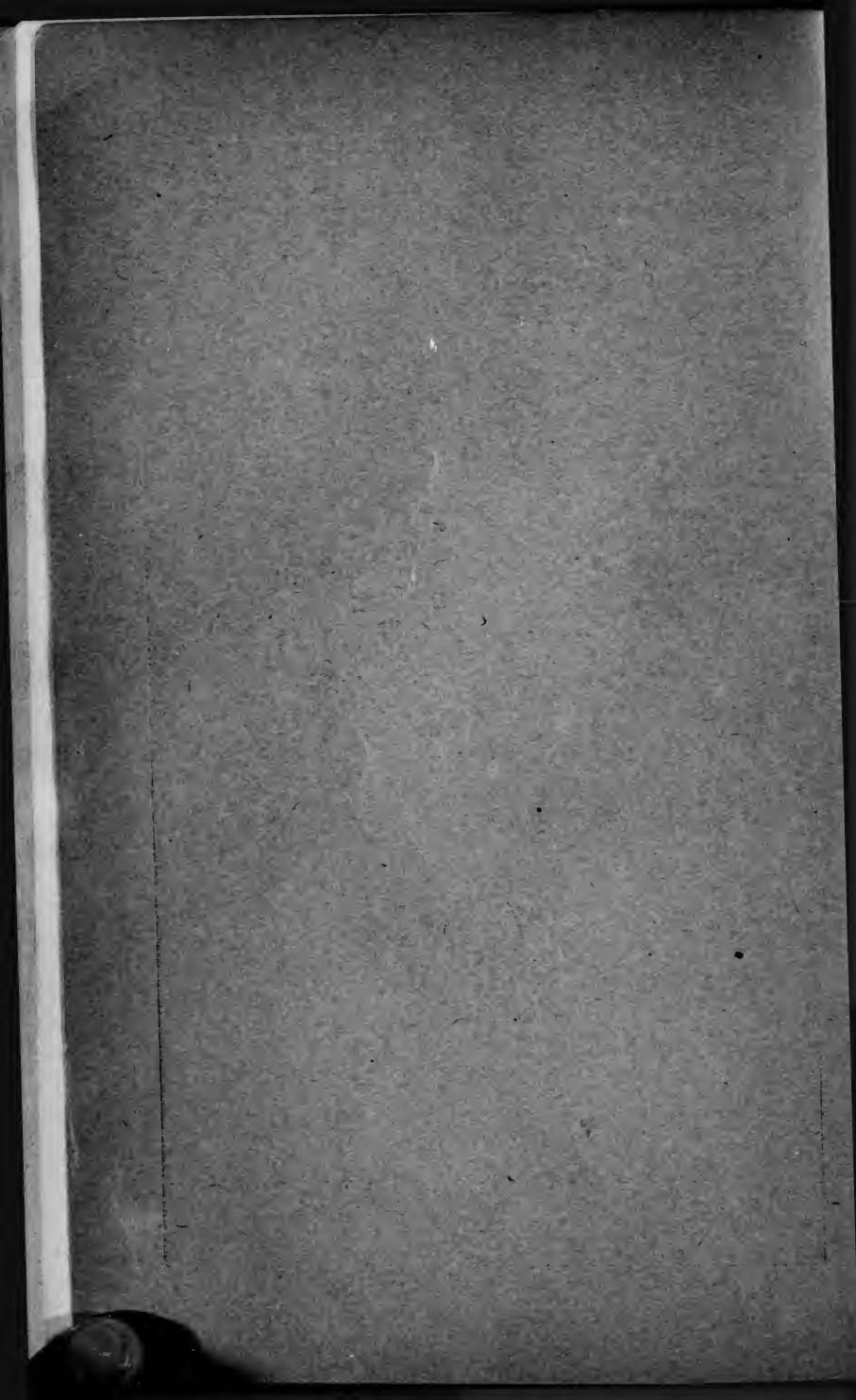
ANNUAL REPORT OF THE
COMMISSIONERS OF THE
DISTRICT OF COLUMBIA
YEAR ENDED JUNE 30, 1914

Vol. II

ENGINEER DEPARTMENT
REPORTS



WASHINGTON
1914



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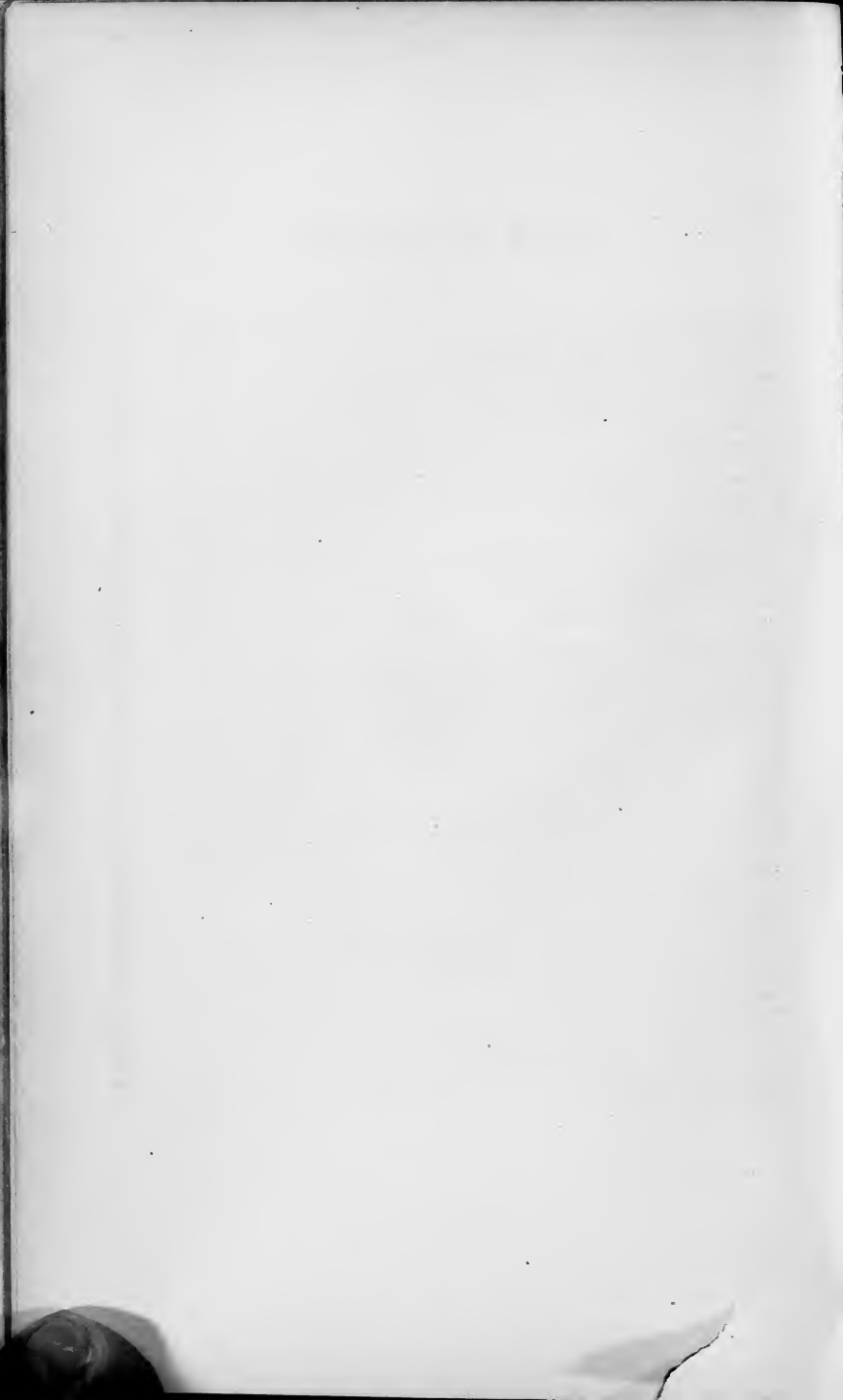


WASHINGTON
1914



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EXTRACT FROM THE REPORT OF THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA
FOR THE FISCAL YEAR ENDED JUNE 30, 1914.

OFFICE OF THE COMMISSIONERS
OF THE DISTRICT OF COLUMBIA,
Washington, November 14, 1914.

*To the Senate and the House of Representatives of the
United States of America in Congress assembled:*

The Commissioners of the District of Columbia herewith submit for the information of Congress, pursuant to the requirements of section 12 of an act providing a permanent form of government for the District of Columbia, approved June 11, 1878 (20 U. S. Stats., 108), a report of the official doings of that government for the fiscal year ended June 30, 1914.

* * * * *

ROADWAY PAVEMENTS.

The sum of \$558,000 was appropriated for expenditure during the year in paving new roadways and resurfacing and repairing old roadway pavements, and the sum of \$241,350 for the construction of suburban roads. For paving sidewalks and alleys \$220,000 was appropriated, for the construction and repair of bridges \$142,600 was appropriated, for grading streets, alleys, and roads \$15,000 was appropriated, and for constructing sidewalks and curbs around public reservations and Government buildings \$14,000 was appropriated. The sum of \$140,569 was expended for repairing pavements disturbed in connection with underground construction work. The total of these expenditures aggregates \$1,330,919. In paving work, sheet asphalt, asphalt block, and asphaltic concrete were used.

The prices paid for new sheet asphalt pavement, asphalt block, and asphaltic concrete pavement were as follows:

Per square yard.

Laying sheet-asphalt pavement (2½-inch asphalt surface, 2-inch binder, before compression), with 6-inch concrete base.....	\$1. 69
Laying vitrified-block gutters, with 6-inch concrete base.....	1. 37
Laying bituminous concrete pavement on 6-inch concrete base.....	1. 64
Laying bituminous concrete pavement, on broken-stone base.....	. 97
Laying 2-inch asphalt block pavement, with 6-inch concrete base.....	1. 79

The prices for the fiscal year 1915 are as follows:

Per square yard.

Laying sheet asphalt pavement (2½-inch asphalt surface, 2-inch binder, before compression), with 6-inch concrete base.....	\$1. 78
Laying vitrified-block gutters, with 6-inch concrete base.....	1. 35
Laying asphaltic concrete pavement (2 inches thick after compression), on 6-inch concrete base.....	1. 70
Laying asphaltic concrete pavement (2 inches thick after compression), on broken-stone base.....	. 96

No contract has been made for the fiscal year 1915 for laying asphalt block, as the only bid received was from a contractor who bid to furnish block not manufactured in the city of Washington,

where the work of manufacture could be kept under proper supervision. The matter of letting a contract for this class of work for 1915 has therefore been held in abeyance.

The current prices for resurfacing and repairing asphalt pavements, under contract, during the year were as follows:

Laying sheet-asphalt pavement (2½-inch asphalt surface, 2-inch binder, before compression), with 6-inch concrete base.....	per square yard...	\$1.68
Laying sheet-asphalt surface (2½ inches before compression).....	do....	.64
Laying sheet-asphalt surface (resurfacing by heater method).....	per cubic foot..	.66
Laying sheet-asphalt binder (in connection with resurfacing work).....	do....	.38
Laying sheet-asphalt surface (for repairs and miscellaneous work, cuts, etc.), per cubic foot.....		.57
Laying asphalt binder (for repairs and miscellaneous work, cuts, etc.), per cubic foot.....		.43
Laying sheet-asphalt surface for repairs, etc., within the space required by law to be kept in repair by street railway companies.....	per cubic foot..	.63
Laying asphalt binder for repairs, etc., within the space required by law to be kept in repair by street railway companies.....	per cubic foot..	.48

A new contract for a period of two years, beginning July 1, 1914, was let at the following prices:

Laying sheet-asphalt pavement (2½-inch asphalt surface, 2-inch binder, before compression), with 6-inch concrete base.....	per square yard..	\$1.665
Laying sheet-asphalt surface (2½ inches before compression).....	do....	.62
Laying asphalt binder (in connection with resurfacing work).....	per cubic foot..	.26
Laying sheet-asphalt surface (for repairs and miscellaneous work, cuts, etc.), per cubic foot.....		.47
Laying asphalt binder (for repairs and miscellaneous work, cuts, etc.), per cubic foot.....		.39
Laying sheet-asphalt surface for repairs, etc., within the space required by law to be kept in repair by street railway companies.....	per cubic foot..	.52
Laying asphalt binder for repairs, etc., within the space required by law to be kept in repair by street railway companies.....	per cubic foot..	.44
Laying asphaltic concrete pavement (2-inch asphalt concrete surface after compression) with 6-inch concrete base.....	per square yard..	1.63
Laying asphaltic concrete surface (2 inches after compression).....	do....	.93
Laying asphaltic concrete surface (in connection with resurfacing work), per cubic foot.....		.51

Sheet asphalt continues to be the leading type of roadway pavement constructed in the District of Columbia, but the use of asphaltic concrete is being increased. A limited amount of asphalt block laid on a concrete base and of a cement roadway pavement with a thin bituminous skin treatment has been laid. No additions were made during the year to the areas of roadways resurfaced by the heater method.

Table showing square yards and mileage of roadway pavements to June 30, 1914.

	Square yards.	Miles.
Sheet asphalt and coal tar.....	2,857,464	151.60
Asphalt block.....	632,641	31.36
Bituminous concrete on concrete base.....	60,557	3.48
Bituminous concrete, stone base.....	51,088	2.68
Cement concrete.....	29,865	1.66
Granite and rubble.....	469,980	25.58
Vitrified block.....	25,535	1.34
Cobble.....	82,121	4.12
Macadam (estimated).....	1,969,600	122.12
Gravel and unimproved.....		166.03
Gutters on asphalt streets.....	204,517	
Gutters on bituminous concrete streets.....	9,575	
Pavements maintained by street railroads.....	556,750	
Total.....	6,949,693	509.97

19.72 miles rated as second-class macadam.

MUNICIPAL ASPHALT PLANT.

The portable municipal asphalt plant which was authorized to be purchased and operated in the appropriation acts for the fiscal years 1913 and 1914 was operated during the year, with results in compliance with the requirement of law that the work done should be economically performed as compared with similar work previously done under contract. Under the law this plant is operated under the immediate direction of the commissioners in doing such work of resurfacing and repairs to asphalt pavements, in the repair of macadam streets by constructing asphalt macadam wearing surface as in the judgment of the commissioners may be economically performed by the use of the plant, but the commissioners are prohibited from doing more work of resurfacing and repairs than can be accomplished with this one plant.

The total output of the plant during the year was 172,128 cubic feet. A large portion of this output was obtained from the use of suitable old surface material removed from streets being resurfaced, to which new asphaltic cement and other material were added. The cost of crushing this old material amounted to \$1.04 per cubic yard, or about 4 cents per cubic foot. Included in this figure was a suitable allowance for interest on the investment, maintenance, and 20 per cent obsolescence. The plant was in operation 232 working days, the average daily output being 742 cubic feet. The cost of operation of plant, hauling material to the streets, cutting out the old pavement to be replaced, laying the new pavement, including fuel charges both at the plant and on the street, averaged 21.8 cents per cubic foot. Of this cost 5 cents represents labor and fuel at the plant, 3.8 cents represents haul to the street, and 13 cents represents placing the material on the street. The overhead charges were the cost of supervision, $3\frac{1}{2}$ cents per cubic foot, maintenance of plant, interest on the investment, and 20 per cent obsolescence, making a total on this account of 1.6 cents per cubic foot. The sharpening of tools averaged one-half cent per cubic foot. The total of these charges, constituting the cost of the plant output, exclusive of material, was 27.4 cents per cubic foot.

By adding to the above charges the various material costs, the cost of different mixtures laid on the street was as follows: Top mixture, using Bermudez cement, 47.4 cents per cubic foot, as compared with the contract price of 57 cents per cubic foot; binder, 38.2 cents per cubic foot, as compared with the contract price of 43 cents per cubic foot.

The elements of rental value of site of plant, taxes, and contractor's profit are not considered in these costs.

The operation of this plant has demonstrated its economy as a small plant, but it is less economical than a larger permanent plant would be. The work of repairing asphalt pavements, except where the roadway is entirely resurfaced, is done by the use of this plant instead of by contract.

SUBURBAN STREETS AND ROADS.

The work done under this heading during the year was as follows:

Construction of suburban roads.....	\$154, 350
Repairs to suburban roads.....	140, 000
Grading streets, alleys, and roads.....	15, 000
Constructing Quarry Road entrance to the Zoological Park.....	67, 000
Total.....	376, 350

A considerable quantity of cement roadway was laid on suburban streets, the paving consisting of a cement base 6 inches thick, covered with a thin surface coat of tar. This class of pavement is proving very satisfactory, and is being constructed at a much less cost than sheet asphalt or asphaltic concrete on cement base. The resultant roadway surface is more easily kept in repair than a macadam roadway. It is intended during the coming year to reduce the base of this pavement to 5 inches in thickness, but to use a richer mixture.

The use of bituminous concrete, both on a concrete base and on a macadam base, was continued, as this class of work appears to be the best suited to heavy suburban traffic.

Approximately \$30,045 was expended for oiling and tarring suburban roadways, and \$2,344 was expended for sprinkling roads which could not be oiled.

At the close of the fiscal year the mileage of improved roads and streets in the District outside of the limits of the city of Washington, but not including those paved with granite block, sheet asphalt, or asphalt block, was as follows:

	Miles.
Bituminous concrete roadway.....	3. 75
Bituminous macadam roadway.....	4. 36
Cement roadway.....	1. 66
Macadam roadway.....	109. 55
Gravel roadway.....	49. 55
Total.....	363. 87

SIDEWALKS AND ALLEYS.

The sum of \$220,000 was expended for paving sidewalks and alleys, and the sum of \$14,000 for sidewalks and curbs around Government reservations and Government buildings. Of the first-named amount one-half of the cost is assessed against private property. No assessment is made for the work adjacent to Government parks and buildings. The sidewalks are constructed of cement, under contract, and the alleys are paved with vitrified or asphalt block, the work being done by day labor under the direction of the commissioners. The total amount of alley pavement laid was 14,683 square yards of vitrified block, and 7,734 square yards of asphalt block, both on a gravel base. During the year the experiment was made of using vitrified block manufactured at the District Workhouse at Occoquan, Va., where prison labor is used for the production of the material. It is expected that there will be an increase of the use of this material during the year.

The prices paid under contract for laying cement sidewalks during the year were as follows:

For large jobs adjoining paved streets, per square yard.....	\$0.92½
For large jobs adjoining unpaved streets and for all small jobs, per square yard.	1.16½

For the fiscal year 1915, the prices are as follows:

For large jobs adjoining paved streets, per square yard.....	\$0.96
For large jobs adjoining unpaved streets and for all small jobs, per square yard.	1.16

The initiative in the matter of paving sidewalks and alleys is generally left with the owners of abutting property, the commissioners requiring a majority petition for such work before it is ordered. Exceptions are made, however, in cases where on account of public danger or other public reason the paving is demanded. The law requires the commissioners to advertise for two weeks their intention to lay sidewalks and curbs and to pave alleys, and to give a hearing to the property owners interested. The work is ordered subsequent to such hearing, when in the opinion of the commissioners it is necessary for the public safety, health, comfort, and convenience. The demand for this class of construction is constant, and increased appropriations for this work could advantageously be expended.

BRIDGES.

Contract was let during the year for the construction of a bridge across Rock Creek on the line of Q Street NW., and work under this contract is now in progress.

Bids have been received for the construction of a bridge across Rock Creek on the line of Pennsylvania Avenue NW., and the work will be contracted for during the fiscal year 1915.

Smaller bridges were constructed during the year as follows:

A rock-faced boulder bridge across Rock Creek in the Zoological Park, for which an appropriation of \$20,000 was made in the sundry civil act for the fiscal year 1912, with a proviso that the work should be done under plans prepared by the engineer of bridges of the District of Columbia. This was a steel-concrete bridge having a clear span of 80 feet, and was constructed at a cost of \$13,637.36, exclusive of roadway, footways, and approaches.

Three steel-concrete bridges were also constructed over Watts Branch at Deane Avenue, Grant Street, and Forty-eighth Place, NE.

The sum of \$17,000 was expended in the construction and repair of bridges. The principal work done was in reflooring the Anacostia Bridge draw span; the Chain Bridge; the Pennsylvania Avenue Bridge across the Anacostia River, and the M Street Bridge over Rock Creek. The bridges over James Creek Canal at M and N Streets were removed and the canal between these points filled.

Appropriations are needed in the near future for the replacement of the Aqueduct Bridge across the Potomac River, the Calvert Street Bridge across Rock Creek, and the replacement with permanent floor construction of the timber floors on the M and P Street Bridges across Rock Creek. The smaller bridges now having wooden floors should also be provided with permanent floors.

ELIMINATION OF SUBURBAN GRADE CROSSINGS.

An appropriation of \$110,000 has been made for the elimination of the railroad grade crossing at Bennings, D. C., and plans for this work are being prepared. All railroad grade crossings have been eliminated within the city limits, and the above-named appropriation will provide for the elimination of one of the most dangerous crossings now existing outside of the city limits on a much-traveled road.

UNION STATION PLAZA.

The central island on the Plaza in front of the Union Station was improved by a plan which called for a grass treatment combined with such necessary walkways as was deemed necessary to give convenient access to the station. These walkways were constructed of a good quality of red vitrified brick, which, combined with the green of the grass, gives a very pleasing effect. The masonry construction on the Plaza connected with the fountains was cleaned and the three large flag staffs were painted.

SURVEYOR'S OFFICE.

The work done under this office is of two classes, that done for private parties and that done for the District of Columbia and the United States. The work done for private parties is paid for by fees. The receipts of fees during the fiscal year amounted to \$13,535.90, as compared with \$16,608.32 for the preceding year. This decrease is no doubt due to the general building depression which prevailed during the year.

Among the large surveys made for the United States and the District of Columbia, were those in connection with the reclamation of the Anacostia River and Flats; a topographical survey of land for reformatory at Occoquan, and for land for an addition to the Zoological Park. This office made a number of surveys under the excise law.

The total number of new blocks or squares created in subdivisions of agricultural land was 59, and the number of new lots 2,706. This was an increase over the preceding year.

This office also made the surveys for the acquisition of small parks at the intersection of streets outside of the limits of the original city, for which two appropriations of \$25,000 each are available. Condemnation proceedings were instituted for obtaining eight such small parks, and these proceedings are now pending. The eight parks will probably use up the first appropriation of \$25,000. No selections have yet been made under the second appropriation.

Under the appropriation of \$2,500 made for surveys of old subdivisions during the year, comprehensive surveys were made of Takoma Park; Harlem; Wisconsin Avenue from R Street to Thirty-fifth Street; Petworth and Brightwood Park; Georgia Avenue; between Rock Creek Church Road and the District line; Palisades of the Potomac; Woodley Road and Cathedral Avenue, north of Woodley Park; Lincoln and Twining City, and square 2588. The work will be of great advantage to the office in making accurate surveys of squares and lots in the localities mentioned.

STREET AND ALLEY EXTENSIONS.

The general authority granted the commissioners to open streets in conformity with the plan for a permanent system of highways in the District appropriation act approved March 4, 1913, has greatly facilitated the acquisition of streets, as it is possible to proceed with a number of important street extensions and widenings without waiting for special legislation, as has been the case in the past.

The Code of Law for the District of Columbia gives the commissioners general authority to open, widen, and extend minor streets and alleys.

Under both of the laws referred to the total cost of acquiring the land, including the expenses of the condemnation proceedings, is paid from revenues of the District of Columbia and assessed against property benefited.

There were filed in court during the year 15 cases for widening and extending alleys, and 28 cases for the widening of streets and the condemnation of land for parks. Other cases will be filed when in the judgment of the commissioners the public interests require such condemnation.

TREES AND PARKINGS.

The number of trees planted on streets, in school yards, and on playgrounds during the year was 2,287, and the number of trees removed 2,503, making a net decrease during the year of 216.

The total number of trees planted along streets, in school yards, and on playgrounds at the close of the fiscal year was 102,343. Of this number 101,912 are curb trees on streets. There are 289.52 miles of streets on which trees have been planted, the mileage not having been increased during the year. The trees are planted on both sides of the street, and the mileage is based on 352 trees per mile. The amount expended in the planting and care of trees was \$43,151.55. The varieties of trees planted were elms, gingkos, lindens, Norway, sugar, and silver maples, pin and red oaks, and sycamores.

There was a decrease in the work of planting young trees on recently improved streets and filling of vacancies in existing tree spaces, due to the fact that a large portion of the appropriation had to be spent for replacing trees blown down by a severe storm during the year. Likewise, little progress was made upon the general trimming of street trees. A considerable portion of the appropriation was used in spraying the trees, which became infested during the midsummer with the fall webworm, tussock moth, and the elm leaf beetle. The total number of trees sprayed during the year was 28,773, and the total number of trees treated for insects by kerosene emulsion for the purpose of destroying an elm tree scale was 2,064.

In addition to caring for the trees unfenced public parkings were mowed during the year for the purpose of ridding them of weeds.

STREET AND ALLEY CLEANING.

The street and alley cleaning division serves a population of about 353,297 and covers an area of approximately 70 square miles. It has charge of the cleaning of all streets, avenues, and alleys in the District of Columbia, except such work on the outlying county roads

and suburban streets as is done under the supervision of the superintendent of county roads. The work is done under the immediate supervision of the superintendent of street and alley cleaning, who also has supervision over the collection and disposal of city refuse, which work is done under contract.

The work of street cleaning involves flushing, squeegeeing, machine and hand cleaning, and dust prevention.

The daily cleaning of all streets in the central portions of the city by the hand patrol amounts to about 3,524,700 square yards. This is an increase of 711,700 square yards over the area cleaned during the fiscal year 1913. Approximately 260 men are employed daily in this work. The cleaning of all paved streets outside of this area is done every other day or every third day, depending upon the location and the traffic. At the beginning of the fiscal year the territory covered by machine cleaning amounted to 2,225,000 square yards. Of this amount, however, 1,603,000 square yards were, on April 16, 1914, taken from the machine cleaning territory and added to the hand patrol territory. In addition to the hand cleaning, nearly all of the smaller paved streets in the hand patrol area are squeegeed two or three times a week, and in addition, all cobblestone, granite and asphalt block pavements and the poorly paved streets are flushed by the use of pneumatic flushing machines, which cover a territory of 374,050 square yards about once in four or five days.

In the suburban portions of the city the surface of practically all the unpaved suburban streets is covered with emulsion road oil, the entire area being covered about 10 times during the year.

This division also cleans all paved alleys in the District of Columbia once a week, there being an increase in the area cleaned during the year from 1,060,000 square yards on July 1, 1913, to 1,079,959 square yards on June 30, 1914. The cleaning of all macadam, gravel, and unpaved streets in the suburban section and the unpaved alleys, is accomplished about once every 10 days, and the area cleaned increased during the year from 1,481,525 square yards to 1,514,180 square yards.

The appropriation for cleaning streets and alleys was decreased \$5,000 under the amount appropriated in the previous fiscal year, but in spite of this reduction the records of area cleaned show a considerable increase over the figures for the previous year.

The methods regarding snow and ice cleaning were considerably changed during the year. Previously no snow was hauled except from street railway intersections, but during the last winter the removal of snow from the streets was carried on day and night. It is estimated that this approximated 160,000 cubic yards of snow. This was removed from the business sections of the city, in addition to the work of opening cross walks, sidewalks, and gutters of the surrounding territory.

The cost of work done during the year per 1,000 square yards is as follows:

Hand patrol.....	\$0. 14
Machine cleaning.....	.156
Alley cleaning.....	.337
Squeegeeing.....	.121
Flushing.....	.232

REMOVAL OF CITY REFUSE.

Forty-eight thousand nine hundred and twenty-seven tons of garbage, 255,358 cubic yards of ashes, 141,683 cubic yards of miscellaneous refuse, 15,514 barrels of night soil, and 19,148 dead animals were removed under contract during the year. The contract prices for this service are as follows:

	Per annum.
Garbage.....	\$68,400
Ashes.....	73,150
Miscellaneous refuse.....	17,000
Night soil.....	16,600
Dead animals.....	2,855

The unit costs are as follows:

Garbage.....	per ton..	\$1.39
Ashes.....	per cubic yard..	.29
Miscellaneous refuse.....	do.....	.12
Night soil.....	per barrel..	.96
Dead animals.....	per animal..	.149

The contracts for the removal of garbage, ashes, and miscellaneous refuse which were entered into for a period of five years from July 1, 1910, expire June 30, 1915, and proposals were asked for new contracts for periods of one, three, and five years.

The District appropriation act for the fiscal year 1915 contained an appropriation of \$7,500 for the purpose of investigating and reporting upon the collection and disposal of garbage and other city wastes, including the preparation of plans and specifications for the construction of disposal buildings, and contract has been made for making this investigation. It will probably not be practicable, even if municipal collection and disposal of this refuse is recommended, to have plants in operation before the expiration of the present contracts, and it was with this object in view that bids were invited for carrying on the work after July 1, 1915.

These bids were received October 15, 1914, and the commissioners decided to award contracts as follows:

To collect and dispose of ashes for a period of one year from July 1, 1915, at the price of \$69,000.

To collect and dispose of garbage, miscellaneous refuse, and dead animals for a period of three years from July 1, 1915, at the following prices per annum: Garbage, \$69,840; miscellaneous refuse, \$28,400; dead animals, \$2,988.

BUILDING OPERATIONS.

The estimated value of building construction, including repairs, during the year but not including buildings under construction by the United States Government, was \$9,544,302. This shows a decrease under the preceding year of \$699,446.

The number of permits issued for buildings, building repairs, awnings, signs, engines, motors, elevators, etc., was 5,644, a decrease of 650 under the preceding year.

The number of dwelling houses constructed was 1,161, a decrease of 379 under the preceding year; the number of business buildings

XIV OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

constructed was 301, an increase of 5 over the preceding year; the number of apartment houses was 34, an increase of 20 over the preceding year; the number of buildings repaired was 4,019, a decrease of 227 under the preceding year. The total number of new buildings erected during the year was 1,496, a decrease of 354 under the preceding year.

The distribution of the cost of these improvements, including repairs to existing buildings, is as follows:

Section.	Buildings.	Repairs, etc. ¹
Northeast.....	\$707,039	\$100,523
Southeast.....	357,150	56,383
Northwest.....	2,777,379	1,077,116
Southwest.....	150,505	37,904
County.....	3,838,490	415,561
Total.....	7,830,563	1,687,489

¹ Does not include awnings, fire escapes, or signs, cost of which is estimated.

Total for buildings, repairs, etc., \$9,544,302.

It is estimated that there are 61,004 brick buildings and 26,089 frame buildings in the District of Columbia, of which number 1,214 brick buildings and 248 frame buildings were constructed during the year.

It will be noted that there was a general decrease in building operations in this city during the year.

By authority of law the commissioners fix a schedule of fees for permits issued by the inspector of buildings, the object being to make the office self supporting. The fees so collected during the year amounted to \$25,005.61, a decrease under the fees for the preceding year of \$1,412.10. The expenses of the office were \$34,594.02. The receipts, therefore, did not meet the expenditures by the sum of \$9,588.41. In anticipation of this loss of revenue the commissioners adopted an amendment to the building regulations, which took effect April 1, 1914, requiring fees to be paid for the inspection of elevators, theaters, and other places of public amusement and buildings falling within the scope of the fire-escape law. It is estimated that fees from this source will add about \$5,000 annually to the receipts.

Amendments were made to the building regulations during the year to insure better construction and better protection for workmen. These regulations prohibited the construction of long narrow tenement houses with insufficient light and air, and provided for additional safety to iron workers engaged in the erection of skeleton steel buildings.

FIRE ESCAPES.

The building office is continuing inspections and taking other action necessary to enforce compliance with the law requiring the erection of fire escapes and fire-prevention apparatus in buildings coming within the scope of the law. The records show a greater number of cases of compliance with this law than in any preceding year.

ELEVATORS.

The elevators in the District of Columbia are inspected by two inspectors under the direction of the inspector of buildings. The number of passenger elevators installed during the year was 42 and the number of freight elevators 26, a total of 68. Elevators are inspected quarterly, and the total number of inspections made during the year by the two inspectors aggregate 2,984, of which 114 were in buildings under the control of the United States Government.

Under a requirement of the building regulations elevator operators are required to pass an examination and be licensed. The number examined during the year was 365, of which number 31 failed. A fee of 50 cents is charged each applicant examined, and the revenue from this source was \$182.50.

INSPECTION OF PRIVATE BUILDINGS.

All private building construction in the District of Columbia is inspected under the direction of the inspector of buildings. The total number of such inspections during the year was 65,668, a decrease of 8,425 under the preceding year. This is an average of 23.4 inspections daily for each field inspector, as compared with an average of 27.4 during the preceding year. The work of inspection, however, was more widely scattered.

INSPECTION OF STEAM BOILERS.

The number of steam boilers inspected by the inspector of steam boilers during the year was 512. The compensation of this official is received from fees paid by the owners of the boilers. The total amount reported by the inspector as received from fees during the year is \$2,265, and the expense of inspection \$452.10, leaving a net compensation of \$1,813.90.

CONSTRUCTION OF MUNICIPAL BUILDINGS.

During the year eight buildings were under construction, under the direction of the municipal architect, as follows:

Building.	Location.	Cost.
Repair and storage building for fire department.	North Carolina Avenue, between Sixth and Seventh Streets SE.	\$14,151.00
Alterations and additions to Birney School No. 127.	Nichols Avenue, between Franklin Street and Howard Avenue, Anacostia, D. C.	48,160.23
Alterations and additions to Congress Heights School No. 111.	Nichols Avenue and Hamilton Road, Congress Heights, D. C.	33,408.09
Shelter sheds for farmers' produce market.	Open space, between Tenth and Twelfth, B and Little B Streets NW.	11,769.00
New Central High School No. 173.....	Square, bounded by Eleventh and Thirteenth Streets, Florida Avenue and Clifton Street.	1,030,450.00
Alterations for accommodation of boiler and coal vault for District of Columbia jail.	Reservation No. 13, Nineteenth and B Streets SE.	13,644.60
Extension colored men's ward and dining room, Home for Aged and Infirm.	Blue Plains, D. C.....	22,387.00
Normal School No. 169 (colored).....	Georgia Avenue, between Howard Place and Fairmont Street NW.	193,178.00
Total.....		1,367,147.92

Plans for the colored high school, an appropriation for which was made at the same time as that for the Central High School, have been prepared, and the building will be under construction during the present calendar year. It is anticipated that this building will be completed and ready for occupancy at about the same time as the Central High School.

REPAIRS TO MUNICIPAL BUILDINGS.

All municipal buildings are kept in repair by the superintendent of repairs, under the direction of the municipal architect.

The appropriation for repairs and improvements to school buildings and grounds for the year was \$100,000.

For repairs to engine houses and grounds \$16,000 was appropriated and expended, and for repairs and improvements to police stations and grounds \$5,500 was appropriated and expended.

CONDEMNATION OF INSANITARY BUILDINGS.

The board for the condemnation of insanitary buildings examined 284 buildings during the year, of which 107 were ordered demolished and 177 repaired; of those ordered demolished 36 were in alleys and 71 on streets; of those ordered repaired 54 were in alleys and 123 on streets.

The total number of buildings examined by the board since its creation by act of Congress approved May 1, 1906, to the end of the fiscal year was 3,362, of which 1,925 were ordered demolished, 1,322 ordered repaired, and on which action on 115 cases is pending. Of those which have been ordered demolished within this period, 639 were in alleys and 1,286 in streets, and of those ordered repaired 430 were in alleys and 892 in streets.

The estimated number of tenants required to obtain new dwellings in streets and in alleys through the action of the board during the year is 281, and the total since the creation of the board, 5,574. It has only been necessary for the board to use the appropriation available for doing the work of demolishing in two cases during the year. In the other cases mentioned the owners have complied with the orders of the board. The alley houses now remaining are in a fairly good state of repair and their condemnation under the law is not warranted.

Special attention has been given to buildings not provided with sewer and water connections with a view of the elimination of box privies by requiring the owners to make such connections or remove the building if the conditions did not warrant the expense of connecting it to the public sewer or water main.

PLUMBING AND PLUMBING INSPECTION.

During the year the plumbing office made 37,177 inspections, which showed a decrease under the preceding year, when the number of inspections was 41,644. This decrease is due to the decrease in the number of new buildings constructed, and a great decrease in the amount of repairs and remodeling of plumbing. It is estimated that

the total cost of new plumbing work installed during the year was \$755,000, and of repairs and remodeling to old plumbing \$340,000. The average number of inspections per day per man was 17. Fifty-nine cases of violation of the plumbing regulations were prosecuted in the police court.

Under the compulsory drainage act 61 cases were installed by the plumbing office, and the sum of \$833.18 was expended in installing plumbing in private premises, which sum was assessed against the various properties as provided by law.

PUBLIC CONVENIENCE STATIONS.

Three public convenience stations are in operation. They are located at Seventh Street and Pennsylvania Avenue NW., Thirteenth Street and Pennsylvania Avenue NW., and Ninth and K Streets NW. These stations were operated for a period of 18 hours per day.

During the year the patrons of the stations numbered 1,879,258. The receipts from the pay compartments aggregated \$2,894.38.

In addition to the stations maintained by the commissioners, the Office of Public Buildings and Grounds has constructed in public parks four park lodges equipped with toilet facilities.

PLUMBING BOARD.

During the year the plumbing board held 40 sessions for examination of candidates for license as master plumbers and gas fitters. Fifty-five applicants were examined. Of this number 24 were original candidates, of whom 6 passed and 18 failed, and 31 had been previously examined, of whom 7 passed and 24 failed.

STREET LIGHTING.

There are 17,335 street lamps of all kinds in the District of Columbia, as follows:

Mantle, gas.....	10, 187
Electric, arc.....	1, 111
Electric, incandescent.....	5, 546
Street-designation lamps.....	491

Total..... 17, 335

This was an increase during the year of 662 lamps of all kinds.

Improved incandescent electric lighting was extended on approximately 9 miles of streets during the year, involving the erection of 600 lamps of 100 candlepower each.

The appropriation act for the fiscal year 1912 required that all inclosed arc lamps in service on July 1, 1911, be replaced with either 4-ampere magnetite lamps, or some other form of improved lighting, the changes to be made at the rate of not less than 400 lamps per annum, and to be completed by April 1, 1914. In compliance with this act there has been so replaced during the three years ending April 1, 1914, 1,203. During the year the lighting of Pennsylvania Avenue NW. from First to Fifteenth Streets was changed, 6.6-ampere arc lamps being used on ornamental posts.

XVIII OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

FIRE ALARM, TELEGRAPH, AND TELEPHONE SERVICE.

About $7\frac{1}{2}$ miles of underground cable were installed during the year, the amount in service on June 30, 1914, being about 131 miles. The amount of aerial cable was not increased during the year, the amount in service on June 30, 1914, being 6.21 miles.

Twelve new fire-alarm boxes were placed in service during the year, making the total number at the end of the year 562.

The number of fire alarms received and transmitted during the year was 1,366, of which 71 were false.

The total number of poles connected with the steam and street railroads, telephone, telegraph, electric light, and the District of Columbia telegraph and telephone service in the District of Columbia were 16,917, of which 16,113 are line poles and 804 guy poles.

The fees collected for the inspection of private electric wiring in buildings during the year amounted to \$5,105.75.

PERMITS.

The permits issued by the permit clerk of the engineer department for various permits, other than those for buildings, amount to 14,958. Of this number 9,922 were covered by fees, and for 5,036 no fees were paid.

AUTOMOBILE BOARD.

The automobile board examined 3,072 persons for permits to operate motor vehicles in the District of Columbia, being an increase of 128 over those examined during the preceding year. Permits were issued to 2,430 applicants to operate vehicles of the gasoline type; 198 of the electric type; 19 of the steam type, and 269 motor cycles. One hundred and twenty-four permits to operate vehicles of the United States and the District of Columbia used in public business were also issued. Five operator's permits were revoked on the recommendation of the major and superintendent of police.

The revenue derived from fees for these permits was \$8,959, of which \$5,942 was paid by residents of the District of Columbia, and \$3,017 by nonresidents.

The automobile board also issued 3,913 identification number tags for motor vehicles.

EXAMINATION OF STEAM ENGINEERS.

The board of examiners of steam engineers held 51 meetings and examined 138 applicants, of whom 49 were found competent.

ROCK CREEK PARK.

The jurisdiction over Rock Creek Park is placed by law under the Commissioners of the District of Columbia and the Chief of Engineers, United States Army, acting jointly.

The amount appropriated for the care and maintenance of the park during the year was \$21,000.

The principal work done during the year was the construction of walls along the approach to the bridge across Rock Creek at Pierce's mill, to replace wooden railings, at a cost of \$1,416.82; the construc-

tion of a roadway in Piney Branch Parkway to connect Beach Drive with Seventeenth Street NW., north of Newton Street, in which \$1,377.42 was expended in grading, and the removal of fallen dead timber at a cost of \$1,664.06. In the general work of care and maintenance of the park, including mowing, repairs to roads and paths, etc., approximately \$12,000 was spent. The road across the northern end of the park, between Beach Drive and Daniels Road, was completed, thus affording a new outlet westward from the park. The macadamized roads were oiled; numerous extensions were made of bridle paths and footpaths; toilet facilities were provided for the use of those using the park, and a portion of the ground was farmed to produce feed for horses belonging to the park.

The general use of the park by the public is largely increasing, as is also the use of the roads by vehicular traffic. It is proposed to construct several new roadways across the park from east to west, and to widen as far as practicable existing roadways so as to take care of this increase in vehicular traffic.

ANACOSTIA RIVER AND FLATS.

The appropriation available for the reclamation and improvement of the Anacostia River and Flats from the Anacostia Bridge to the District line on September 1, 1914, was \$249,980.89. This work is being done under the direction of the Chief of Engineers of the United States Army, and at the beginning of the fiscal year 1914 the work was approximately 5 per cent completed.

In connection with this work authority is granted for the condemnation of the water frontage on each side of the Anacostia River from the Anacostia Bridge to the District line, between high-water lines and the 10-foot contour lines, and all land in the river bed between these limits and between high-water lines, the title to which is not in the United States. Condemnation proceedings in connection with this project are now in progress.

The District appropriation act for the fiscal year 1915 also provided for an assessment of benefits for this improvement, to be determined by a jury, the measure of benefits being one-half the increased value added to abutting and adjacent property by reason of such improvements.

HARBOR FRONT.

The total amount received from the rental of wharves and river frontage placed by law under the direction of the commissioners during the year was \$26,342.20, divided as follows:

Potomac River front.....	\$23, 706. 20
Anacostia River front.....	1, 088. 25
James Creek Canal.....	1, 547. 75
Total.....	26, 342. 20

The actual water frontage in the District of Columbia devoted to commerce, with the exception of canals, is about 2 miles. The total available water frontage is about 18 miles, of which about 8 miles is set aside for parks and purposes of the United States. The largest amount of wharf property under the control of the commissioners is that along the Washington Channel. The total frontage along this channel is 9,275 linear feet, of which 4,675 linear feet between the

grounds of the War College and the south curb line of N Street is under the control of the United States and the remaining 4,600 linear feet is under the control of the commissioners. Along this frontage are located the harbor police station, dock of the harbor boat, house and dock of the fire boat, the District morgue, two District property yards, and the municipal fish wharf and market. The lower portion of the frontage is used for river-excursion traffic and steamboat traffic between Washington, Baltimore, Norfolk, and points along the lower river, and the upper portion is used for wood, lumber yards, etc. The lease for the wharves on the Potomac River front are generally for a period of five years, most of them expiring March 15, 1918. The basis of rental is a net return of 4 per cent on the estimated value of the wharf property, with the requirement that the lessee shall make all improvements and repairs. The leases along the Anacostia River and James Creek Canal are generally for lesser periods.

The property along the Anacostia River is largely undeveloped, owing to the uncertainty of ownership of abutting land and riparian rights, and steps are being taken by legal proceedings under the direction of the Attorney General to settle the question of title.

The wharves along the Georgetown Channel of the river are privately owned, except the foot of streets. Two leases have been entered into with private parties, one for the foot of Thirty-third Street and one for the foot of G Street.

The portion of James Creek Canal from N Street to P Street, a distance of 1,000 feet, is under lease for commercial purposes. From P Street to the outlet of the canal, on the Anacostia River, a distance of about 3,000 feet, the canal extends along the grounds of the War College and Engineer School.

IMPROVEMENT OF THE HARBOR FRONT.

It will soon become necessary to rebuild the wharf structures along the Washington Channel, and when this is done it should be along some definite plan. The commissioners believe they should be authorized to prepare such a plan and submit it to Congress, and they have included in their estimates to Congress this year an item for this purpose. The District appropriation act for the fiscal year 1915 contained an appropriation of \$50,000 for reconstructing the wharves operated in connection with the municipal fish wharf and market, and plans and specifications therefor are in course of preparation. The market buildings on this wharf are under the control of the superintendent of weights, measures, and markets.

SEWERS.

The length of main and pipes sewers constructed during the year was about 17½ miles. The total length of main and pipe sewers in the District of Columbia on June 30, 1914, was 661.57 miles, of which 133.57 miles are main sewers and 528 miles pipe sewers. The total cost of the sewerage system to June 30, 1914, was \$12,470,940.74. The total cost of the sewage-disposal system was \$4,495,830.13, making the total cost of the complete system to June 30, 1914, \$16,966,770.87.

Twenty-two billion six hundred and fifty-two million gallons of sewage and 417,000,000 gallons of storm water were pumped during the year through the sewerage pumping station. The pumping plant was continuously in operation without interruption of service, and received the sewage from practically the entire District of Columbia, delivering it at the outfall on the Potomac River. Nine million three hundred and eight thousand pounds of coal were consumed in operating the pumps.

The outfall of the sewage-disposal system on the Potomac River near Shepherds Point was under constant observation during the year, and the general condition of the waters in the vicinity continued excellent. Examination of the river bottom showed no evidence of sludge deposits for a distance of 60 miles below the sewage outlets, and the shores and beaches were free from any objectionable condition as to odor or deposits. The surface of the river was substantially free from oil or other objectionable floating matter. No oxygen tests were made during the year, as a sanitary survey is being made of the Potomac River by the United States Public Health Service, and this survey included oxygen tests. It is understood that this survey has been substantially completed, and the report thereof is in preparation. The results of this survey will be important in determining the question of the purification of river waters, and assist the District of Columbia in dealing with the problem of sewage purification.

STREAM POLLUTION.

Work was continued during the year on the study of streams flowing into and through the District of Columbia as to the extent of their pollution by the discharge of sewage therein from neighboring Maryland towns. The pollution of these streams is now very apparent, and is steadily increasing. The subject was made the matter of a special investigation by the Department of Health of the State of Maryland and its bureau of sanitary engineering, and a report was submitted by the latter on February 3, 1914, to the Sewage Commission of Montgomery and Prince Georges Counties, Md. The governor of the State appointed a commission to consider plans to remedy these conditions. The commission submitted to the Maryland State Legislature a plan providing for the creation of a sanitary district embracing the State area adjacent to and draining into the District of Columbia, but no action was taken by the legislature toward enacting the bill. Until some comprehensive action is taken by the State of Maryland on this subject no action can be taken by the District of Columbia to secure an abatement of the objectionable conditions.

SUBURBAN SEWERS.

The following table shows the length and cost of sewers constructed during the year, mostly in the suburban portions of the District:

Section.	Length.	Cost.
	<i>Feet.</i>	
1. County west of Rock Creek.....	17,217.02	\$34,997.10
2. County east of Rock Creek.....	27,352.38	123,187.20
3. County west of Anacostia River.....	6,477.43	60,250.68
4. County east of Anacostia River.....	17,085.34	88,535.36
5. Washington City.....	14,995.54	72,782.87

SEWAGE DISPOSAL SYSTEM.

Under the sewage disposal system, the third section of the Rock Creek main intercepting sewer was constructed into the National Zoological Park as far as Adams Mill Road, and the fourth section, requiring a tunnel of 2,000 feet in length was excavated as far as Klingle Road and a portion of the sewer constructed. The fifth section, consisting of 1,300 feet of tunnel and 230 feet of open-cut work, was placed under contract, and 500 linear feet of tunnel excavation completed. Section 3, of the Anacostia main intercepting sewer, extending to Pennsylvania Avenue SE., was completed. This sewer has a total length of 9,605 linear feet. The outlet channel of the northeast boundary sewer was reconstructed.

WATER MAINS.

Ninety-eight thousand four hundred and sixty feet, or 18.6 miles, of water mains of all sizes were laid during the year at a total cost of \$191,303.87. The total length of water mains now in service is 3,120,406 feet, or 591 miles.

Five hundred and six fire hydrants, 13 public hydrants, and 6 horse fountains were erected during the year, and 383 fire hydrants, 6 public hydrants, and 2 horse fountains were abandoned, making the total number in service at the end of the year as follows: Fire hydrants, 3,289; public hydrants, 211; sanitary fountains, 11; horse fountains, 152; deep wells, 44; and shallow wells, 9.

The most important work of the year was the completion and putting into service of the Anacostia pumping station, and the extension of water service to the higher land beyond the Eastern Branch. The next most important project was the reinforcing trunk main laid in the low service area north and east of Capitol Hill. This consisted of about 4,800 feet of 30-inch and 4,700 feet of 24-inch main, and completed a loop much needed to insure uninterrupted service in the outlying portions of the gravity service and throughout Anacostia. Water service was also extended to the Home for the Aged and Infirm at Blue Plains, D. C., necessitating the laying of 7,600 feet of 8-inch main, reaching practically to the southernmost point of the District.

WATER CONSUMPTION AND WASTE.

By reason of the installation of meters and the operation of the pitometer service a still further decrease in the consumption of water was accomplished during the year. The present mean daily rate of consumption is now about 54,000,000 gallons, and the per capita rate 152 gallons. Measures to reduce the consumption of water were started in 1905, when the mean daily rate had reached 69,000,000 gallons and the per capita about 227 gallons. The decrease in per capita rate since 1905 is 33 per cent. The safe mean rate of flow in the only conduit supplying the city with water is about 65,000,000 gallons daily. It is hoped that the per capita rate can be finally reduced to 130 gallons, and with the population increasing at about the same rate in the past the mean daily consumption would then reach the mean safe daily capacity of the conduit in the year 1930, when the population

of the District is estimated will be about 500,000. By means of the pitometer service for the prevention of water waste a total underground leakage was found and stopped, amounting to 2,552,000 gallons per day. The total expenses of this service were \$38,613.25.

The total pumpage of water during the year was 9,201,500,000 gallons.

WATER REVENUES AND EXPENDITURES.

The water revenues from all sources during the year amount to \$328,396.69. The expenditures for the year amounted to \$794,952.16. The outstanding net liabilities on June 30, 1914, were \$32,497.90, leaving a working balance to the department on that date of \$946.63. Of the expenditures during the year about 52 per cent were for the extension of the plant; 27 per cent for operation, and the balance for repairs and replacements.

Water is furnished free to churches, hospitals, orphan asylums, schools, and charitable institutions under authority of law to the extent of 19,348,600 cubic feet. This is based on a per capita allowance of from 60 to 100 gallons per day, depending on the character of the institutions. All water in excess of that allowed is charged for at meter rates. This excess of allowance amounted to 5,419,700 cubic feet during the year.

WATER METERS.

During the year there were installed 8,555 meters, making the total number in service on June 30, 1914, 42,161. The total number of water services is 66,914, and of these 37 per cent remain yet unmetered. It is estimated that the metering of the city will be completed in the summer of 1918. The average cost of installing meters by the District of Columbia during the year was \$10.54, including the cost of the meter, which was \$4.90. The rate charged for water on meter services during the year was 4 cents per 100 cubic feet for all used in excess of 7,500 cubic feet. The minimum charge for 7,500 cubic feet is \$4.50 per annum. The average annual payment where meters were installed by the District of Columbia was \$5.80. Water rent bills are delivered to the householder annually at the minimum rate, which allows the use of 7,500 cubic feet, or 56,100 gallons, and if on actual measurement water is found to be used in excess of this amount, bills are rendered for such excess at the rate of 4 cents per 100 cubic feet.

On the water services which are not metered, water for domestic purposes is charged according to the number of stories and frontage. For premises of two stories with a front width of 16 feet or less the minimum rate is \$5 per annum; for each additional front foot or fraction thereof 31 cents is charged. For each additional story one-third of the charges as computed above is added. For business premises not metered rates vary from \$1 to \$25 per annum. Where the rate is \$25 or more, a meter is required to be installed at the expense of the consumer.

PROPERTY ACCOUNTABILITY.

On March 27, 1913, the commissioners designated the auditor, the superintendent of the water department, and the purchasing officer as a committee, with instructions to recommend to them a system

of property accountability and records. On May 7, 1914, there were added to this committee the superintendent of sewers, the superintendent of the street cleaning department, and Capt. R. G. Powell, assistant to the engineer commissioner, the latter being designated chairman of the committee.

The committee has given careful consideration to the subject and taken steps to install a system which will prove to be economical and satisfactory.

CHANGE IN PERSONNEL OF BOARD OF COMMISSIONERS.

On October 31, 1914, Lieut. Col. Chester Harding, Corps of Engineers, U. S. Army, detailed by law as a Commissioner of the District of Columbia, was relieved from this duty by order of the President and assigned to duty under the Governor of the Panama Canal. He was succeeded as commissioner by Maj. Charles W. Kutz, Corps of Engineers, U. S. Army.

Very respectfully,

OLIVER P. NEWMAN,
FREDERICK L. SIDDON, S,
CHAS. W. KUTZ,

Commissioners of the District of Columbia.

ORGANIZATION OF THE ENGINEER DEPARTMENT, D. C.

Lieut. Col. CHESTER HARDING, Corps of Engineers, United States Army,
Engineer Commissioner, D. C.

Capt. MARK BROOKE, Corps of Engineers, United States Army,
Capt. J. L. SCHLEY, Corps of Engineers, United States Army, } *Assistants.*
Capt. R. G. POWELL, Corps of Engineers, United States Army, }

UNDER THE IMMEDIATE SUPERVISION OF THE ENGINEER COMMISSIONER.

RECORD DIVISION—

D. E. GARGES, *Chief Clerk.*

WEARF COMMITTEE—

DANIEL E. GARGES, *Chief Clerk, Engineer Department.*

D. E. McCOMB, *Engineer of Bridges.*

RUSSELL DEAN, *Harbor Master.*

ROCK CREEK PARK—

L. R. GRABILL, *Assistant Engineer in Charge.*

DISTRICT BUILDING—

Capt. MARK BROOKE, } *Superintendents.*
Capt. J. L. SCHLEY, }

UNDER THE IMMEDIATE SUPERVISION OF CAPT. BROOKE.

HIGHWAYS (STREETS, ROADS, BRIDGES, ETC.)—

C. B. HUNT, *Engineer of Highways.*

Sidewalks and alleys—

H. N. MOSS, *Superintendent of Streets.*

Construction and maintenance of suburban roads—

L. R. GRABILL, *Superintendent of Suburban Roads.*

Construction and care of bridges—

D. E. McCOMB, *Engineer of Bridges.*

STREET AND ALLEY CLEANING, COLLECTION OF GARBAGE, ETC.—

J. W. PAXTON, *Superintendent of Street Cleaning.*

ASPHALTS AND CEMENTS—

J. O. HARGROVE, *Inspector of Asphalts and Cements.*

SURVEYOR'S OFFICE (including street extensions)—

M. C. HAZEN, *Surveyor.*

TREES AND PARKINGS—

TRUEMAN LANHAM, *Superintendent of Trees and Parkings.*

PERMITS—

H. M. WOODWARD, *Permit Clerk.*

AUTOMOBILE BOARD—

H. M. WOODWARD, *Secretary.*

UNDER THE IMMEDIATE SUPERVISION OF CAPT. SCHLEY.

ELECTRICAL DEPARTMENT—

W. C. ALLEN, *Electrical Engineer.*

ENGINEER DEPARTMENT STABLES—

J. W. BEALE, *Superintendent.*

UNDER THE IMMEDIATE SUPERVISION OF CAPT. POWELL.

WATER DEPARTMENT—

W. A. MCFARLAND, *Superintendent.*

Water rates—

G. W. WALLACE, *Water Registrar and Chief Clerk.*

SEWER CONSTRUCTION AND MAINTENANCE—

ASA E. PHILLIPS, *Superintendent of Sewers.*

MUNICIPAL ARCHITECT—

SNOWDEN ASHFORD.

Repairs to municipal buildings—

HENRY STOREY, *Superintendent of Repairs.*

BUILDING INSPECTION—

MORRIS HACKER, *Inspector of Buildings.*

Plumbing plans and inspection—

A. R. MCGONEGAL, *Inspector of Plumbing.*

Plumbing board—

P. C. SCHAEFER.

J. S. O'HAGAN.

R. A. O'BRIEN.

Board of examiners of steam engineers—

E. F. VERMILLION.

H. BOESCH.

JAS. F. FINK.

BOARD FOR CONDEMNATION OF INSANITARY BUILDINGS—

Capt. R. G. POWELL, *Assistant to Engineer Commissioner.*

DR. WILLIAM C. WOODWARD, *Health Officer.*

MORRIS HACKER, *Inspector of Buildings.*



REPORT OF THE OPERATIONS OF THE ENGINEER DEPARTMENT OF THE DISTRICT OF COLUMBIA.

REPORT OF THE ENGINEER OF HIGHWAYS.

WASHINGTON, D. C., October 1, 1914.

SIR: I have the honor to submit the following report of the operations of the office of the engineer of highways for the fiscal year ended June 30, 1914.

The total amount of funds appropriated by Congress and deposited by corporations and others for disbursement by the surface division aggregated \$1,330,919, of which \$220,000 was for paving sidewalks and alleys in all parts of the District; \$558,000 for paving new roadways and repairing old roadway pavements; \$241,350 for construction of suburban roads; \$142,600 for construction and repair of bridges; \$15,000 for grading streets and avenues; \$14,000 for sidewalks and curbs around Government reservations, buildings, and parks; and \$140,569 was spent in repairing pavements disturbed by other branches of the District government, and by various corporations and others.

Summary of work under appropriation for improvements and repairs for year ending June 30, 1914.

Character of work.	Streets and avenues.	Suburban streets and roads.	Repairs to asphalt pavements.	Total.
Sheet asphalt paving.....square yards..	22,720.10	5,561.64	32,788.36	61,070.10
Asphalt surface.....do.....			32,351.28	32,351.28
Vitrified block gutters.....do.....	1,968.02	5,147.33	6,032.73	13,148.08
Asphalt block paving.....do.....	5,667.83	2,424.29		8,092.12
Bituminous concrete, concrete base.....do.....		19,399.19	10,349.15	29,748.34
Bituminous concrete surface.....do.....			5,219.23	5,219.23
Bituminous concrete, stone base.....do.....	5,939.29	16,927.50		22,866.79
Cement roadway pavement.....do.....		14,674.56		14,674.56
Macadam roadway.....do.....		58,182.00		58,182.00
Cobble and granite gutters.....do.....		9,223.61		9,223.61
Granite and bluestone set.....linear feet..	8,152.92	25,837.05	10,318.51	44,308.48
Cement curb formed and laid.....do.....		9,880.91		9,880.91
Cement gutters.....do.....		8,851.04		8,851.04
Grading.....cubic yards..	7,949.00	59,063.00	3,741.24	70,753.24
Curb reset.....linear feet..	5,482.35	13,273.70	12,927.38	31,683.33
Old asphalt removed.....square yards..			35,764.29	35,764.29
Old cobble and granite removed.....do.....	8,947.00	8,970.82		17,917.82
Sidewalks laid under assessment and permit work.....do.....				53,619.00
Sidewalks and curbs around Government reservations.....square yards..				8,612.00
Alley pavements laid:				
Asphalt block, assessment and permit work.....do.....				7,734.00
Vitrified block, assessment and permit work.....do.....				14,653.00

NOTE.—Included in the above statement: 8,608.61 square yards bituminous concrete in place of sheet asphalt; 6,111.55 square yards bituminous concrete in place of asphalt block; 20,810 square yards sheet asphalt in place of asphalt block.

The following is a list of tables appended to the report:

TABLE A.—Street railways in the District of Columbia July 1, 1914.

TABLES B and C.—Statement of character and extent of street pavements.

TABLE E (two parts).—Schedules of work on streets and avenues and county roads, and suburban streets.

TABLE F.—Repairs to asphalt and coal-tar pavements.

TABLE G.—Work done for street railway companies.

TABLE H.—Work done by day labor under appropriations for repairs to streets, avenues, and alleys.

TABLE I.—Regular permit work.

TABLE K.—Assessment work.

TABLE L.—Replacing and repairing sidewalks and curbs around public reservations.

TABLE M.—Miscellaneous work.

TABLE N.—Whole cost work.

TABLE O.—Repairs to cuts by plumbers and others.

TABLE P.—Grading streets, alleys, and roads.

Sheet asphalt continues to be the leading type of roadway pavement constructed, followed by asphaltic concrete. A limited amount of asphalt block on a concrete base, and of cement roadway pavement with a thin bituminous-skin treatment was laid. The contract prices for these constructions, exclusive in each case of grading and incidental costs, were as follows:

	Per square yard.
Sheet asphalt.....	\$1. 69
Bituminous concrete on concrete base.....	1. 64
Bituminous concrete on broken stone base.....	.97
Asphalt block on concrete base.....	1. 79
Cement concrete.....	.94

Each price includes a maintenance guaranty for five years.

No additions were made during the year to the area of roadways resurfaced by the heater method, the expectant policy as to the behavior of the considerable area already so treated being continued.

Alley pavements of a smooth modern type were laid to the extent of a total of 14,683 square yards of vitrified block and 7,734 square yards of asphalt block, both paved on a gravel base. A small amount of the vitrified block used was secured from the brick plant operated by the District at Occoquan, where prison labor is availed of for the production of material suitable for public works. If this material proves durable and its uniform quality can be confidently counted upon, its continued use will be indicated as a good administrative procedure.

The surface improvements in connection with the opening of the entrance to the Zoological Park at Harvard Street were completed, including the several intersecting streets embraced in the project, and the masonry step connections between the high and low grade sections of Quarry Road.

The construction of the bridge across Rock Creek on the line of Q Street was placed under contract and operations begun thereunder, final action having been secured in the court proceedings for the condemnation of the site for the bridge and its approaches.

Under the project for the elimination of grade crossings the central island of the Union Station Plaza was improved by creating a sodded area combined with such necessary walkways as were indicated by the volume and direction of the pedestrian traffic observed to cross this space. The masonry of the plaza was cleaned and the flagstuffs painted.

Cement sidewalks were laid to the exclusion of other types throughout the year. The contract prices being 92½ cents per square yard for urban work and \$1.16½ per square yard for suburban work.

Work on the project for the construction of the Pennsylvania Avenue Bridge across Rock Creek was limited to the preparation of the specifications and plans. The nature of the work is such that the funds available would not have justified the placing of the work under contract on as advantageous terms as to await the appropriation of the total cost, and the final completion of the work has not been postponed by the action taken.

MUNICIPAL ASPHALT PLANT.

The municipal asphalt plant, which was authorized to be purchased and operated in the appropriation bills of 1913 and 1914, was so operated, with results that complied with the requirements of the law, that the work should be economical as compared with contract work.

The total output of the plant during the fiscal year was 172,128 cubic feet.

A large fraction of this output was made from suitable old topping material removed from the streets, to which proper additions of asphaltic cement and other material were made with a resulting substantial economy.

The cost of suitably crushing this old material, thus preparing it for the addition of the asphaltic cement, amounted to \$1.04 per cubic yard of material, or about 4 cents per cubic foot, including in this figure a suitable allowance for interest on the capital invested in this portion of the plant, maintenance of the same, and 20 per cent obsolescence. The plant proper was operated for 232 working days, the aver-

age output per day being 742 cubic feet and the cost of operation of the plant and the labor hauling the material to the street, cutting out and laying the same, including all fuel charges, both at the plant and on the street, averaged 21.8 cents per cubic foot. Of this cost 5 cents represented labor and fuel at the plant; 3.8 cents represented haul to the street, and 13 cents represented placing on the street. The overhead charges were two in number; the cost of supervision, foremen, etc., was 3½ cents per cubic foot, and the maintenance of the plant, interest on the capital invested, and 20 per cent obsolescence on the plant amounted to 1.6 cents per cubic foot. Tool sharpening, a constant expense, averaged one-half cent per cubic foot. The aggregate of the four items last enumerated, constituting the cost of the plant output, exclusive of the cost of the material, was 27.4 cents per cubic foot. By additions to this of the various material costs indicated by the formula used for different mixtures, the total cost of such mixtures results, thus for a top mixture manufactured with Bermudez asphaltic cement, known as class A work in our specifications, the cost of the material, including the proper waste, was 20 cents, which, added to the manufacturing cost above of 27.4 cents, makes a total cost of 47.4 cents per cubic foot, comparable with the current contract price of 57 cents cubic foot; while for binder mixture under the same specifications the material cost was 10.8 cents, which, added to manufacturing cost as before, 27.4 cents, makes a total cost of 38.2 cents per cubic foot, comparable with the current contract price of 43 cents per cubic foot.

The continued use of old material mixture for asphalt repairs is still confessedly experimental. Its manifest economy is its justification and until its deficiencies shall be recognized as compensating for this advantage it is proposed to continue the procedure.

No proper effort or outlay has been spared to maintain the plant against deterioration, so far as this has been practicable.

My acknowledgments are due to the employees of this division for the work accomplished by the office during the year.

I transmit herewith the reports of the engineer of bridges, the superintendent of streets, and the superintendent of suburban roads.

Very respectfully,

C. B. HUNT,
Engineer of Highways.

Capt. MARK BROOKE,
*Corps of Engineers, United States Army,
Assistant to Engineer Commissioner, District of Columbia.*

STATEMENT OF PER DIEM EMPLOYEES.

Statement showing employees temporarily required in connection with street, road, and bridge construction and repairs, and appropriations and deposits from which paid during fiscal year ended June 30, 1914.

SURFACE DIVISION.

Designation.	Number.	Rate per diem.
Assistant engineers.....	3	2 at \$6, 2 at \$5, 1 at \$4.
Draftsmen.....	1	1 at \$4.
Transitman.....	1	Do.
Rodman.....	1	1 at \$3.
Inspectors.....	14	1 at \$5, 11 at \$4, 2 at \$3.
Copyists.....	7	2 at \$4.50, 3 at \$3.50, 1 at \$3, 1 at \$2.
Computers.....	2	2 at \$4.
Overseers.....	2	1 at \$4.50, 1 at \$3.
Chainman.....	1	1 at \$2.25

Appropriations from which paid:		
Improvements and repairs, District of Columbia, 1914.....		\$21,786.49
Elimination of grade crossings.....		72.00
Quarry Road entrance to Zoological Park, District of Columbia.....		526.00
Q Street Bridge across Rock Creek, District of Columbia.....		1,411.00
Construction of suburban roads and suburban streets.....		2,872.00
Total.....		26,667.49

REPORT OF THE SUPERINTENDENT OF STREETS.

WASHINGTON, August 27, 1914.

SIR: I have the honor to submit herewith the annual report of the operations under my charge for the fiscal year ended June 30, 1914.

Table "H" is a summary of work done by day labor under the appropriation for "Current repairs to streets, avenues, and alleys." The cost of such work was \$66,815.50, including the repair of 4,500 dangerous holes. One-third of this work was sidewalk and alley work, and the other two-thirds was repairs to street roadways.

Table "I" is a list of work done under the permit system, wherein the property owners requested the improvement, and paid one-half the cost; the District paying the other half. The cost of this work was \$8,779.14.

Table "K" is a list of work done under the assessment system. One-half of the cost of such work is charged against the abutting property. The total cost was \$180,410.67.

Table "L" is a list of the work paid for from the appropriation for "Replacing sidewalks and curbs around public reservations." The amount expended under this class of work was \$11,509.66.

Respectfully,

H. N. Moss,

Superintendent of Streets, District of Columbia.

The ENGINEER OF HIGHWAYS.

Laying and relaying asphalt block in various sections.

[Appropriation 1914. Job, 1007. July 11, 1913, to June 30, 1914.]

Northeast section:

Labor.....	\$5,421.38
Sand.....	476.74
101,153 asphalt blocks, at \$68.....	6,878.40
	<hr/> 12,776.52

Laid 5,079 square yards new block; relaid 8,680 square yards old block.

Southeast section:

Labor.....	\$8,723.69
Sand and cement.....	760.54
210,924 asphalt blocks, at \$68; 38,125 special blocks, at \$68.....	16,935.33
	<hr/> 26,419.56

Laid 10,279 square yards new block; relaid 15,528 square yards old block; reset 1,220 feet curb.

Southwest section:

Labor.....	\$564.77
Sand.....	67.18
27,798 asphalt blocks, at \$68.....	1,890.26
	<hr/> 2,522.21

Laid 1,356 square yards new block; relaid 1,132 square yards old block.

REPORT OF SUPERINTENDENT OF SUBURBAN ROADS.

WASHINGTON, September 4, 1914.

SIR: The appropriations expended wholly or in part under this office in the fiscal year ended June 30, 1914, were as follows:

Construction of suburban roads.....	\$154,350
Repairs to suburban roads.....	140,000
Grading streets, alleys, and roads.....	15,000
Quarry Road entrance to Zoological Park (part of).....	67,000

Itemized statements of these expenditures are submitted herewith.

In new construction, the entrance from Sixteenth Street to the Zoological Park by the way of Harvard Street was completed, including the construction of extensions of Eighteenth Streets, Lanier Place, and Summit Place, and the improvement of Quarry Road. Connecticut Avenue NW., between Newark and Tilden Streets, Sherman

Avenue NW., between Florida Avenue and Columbia Road; and Eleventh Street NW., between Clifton Street and Columbia Road, were paved with bituminous concrete, of which Sherman Avenue was on concrete base, the two others being on broken-stone base. The improvement of Rhode Island Avenue NE., between North Capitol and Fourth Streets, was completed; and the improvement of Macomb Street NW., between Connecticut and Wisconsin Avenues, was finished.

The north side of Massachusetts Avenue NW., between Arizona and Nebraska Avenues, was widened to accommodate the new track of the Washington Railway & Electric Co.

In addition, many smaller items of improvement were completed.

A considerable quantity of cement roadway was laid on suburban streets which were well built up. The cement base was 6 inches thick, covered with a thin surface coat of tar. This class of pavement is proving satisfactory, being constructed at a cost much less than sheet asphalt or bituminous concrete on cement base, and being much more easily kept in repair than a macadam roadway under the conditions found in such localities. It is proposed, during the coming year, to make these pavements only 5 inches in thickness, but of a richer mixture.

The use of bituminous concrete, both on concrete base and on old macadam base, was continued, as this class of work appears to be the best suited to a heavy suburban traffic. It is recommended that the most heavily traveled suburban streets and roads be paved with this class of material as rapidly as funds can be secured for the purpose.

The largest items of work done under the appropriations for repairs to suburban roads, were as follows:

Daniel Road NW., from the line of Rock Creek Park to Rittenhouse Street (reconstructed).....	\$6,732.25
Georgia Avenue NW., from Irving to Shepherd Streets.....	1,149.08
Michigan Avenue NE., from North Capitol Street to the District line.....	2,182.12
Rhode Island Avenue NE., from North Capitol Street to South Dakota Avenue.....	1,348.14
Streets in Brookland NE.....	2,685.62
Bladensburg Road NE.....	2,977.55
Streets in Langdon NE.....	809.26
Naylor Road SE.....	863.65
Livingston Road SE.....	716.75
Pennsylvania Avenue SE.....	935.79

Smaller items of repairs will be found in the Appendix. Approximately \$30,045 was expended for oiling and tarring, and \$2,344 was expended for sprinkling roads which could not be oiled, making about \$32,339 expended during the year for dust prevention. For items of minor repairs too small to be tabulated, \$35,307.44 was expended.

At the close of the fiscal year, the mileage of improved roads and streets in the District of Columbia, outside of the limits of the city of Washington, but not including those paved with granite block, sheet asphalt, or asphalt block, is as follows:

	Miles.
Bituminous concrete roadway.....	3.75
Bituminous macadam roadway.....	4.36
Cement roadway.....	1.66
Macadamized roadway.....	109.55
Gravel roadway.....	49.55

Very respectfully,

L. R. GRABILL,
Superintendent Suburban Roads, District of Columbia.

The ENGINEER OF HIGHWAYS.

Repairs to suburban roads, 1914.

Job No.	Location.	Work.	Cost.
SECTION 1.—Potomac River to Rock Creek.			
4034	East side Connecticut Avenue, between Jenifer and Keokuk Streets.	Construct gutters.....	\$361.75
4036	Albemarle Street, between Connecticut and Wisconsin Avenues.	Repair.....	430.62

Repairs to suburban roads, 1914—Continued.

Job No.	Location.	Work.	Cost.
SECTION 1.—Potomac River to Rock Creek—Continued.			
4054	Daniel Road, from Wise to Military Road.....	Reconstruct.....	\$8,732.25
4079	Forty-fourth Street, between Murdock Mill Road and Albenmarle Street.....	Repair.....	267.62
4081	Fessenden Place NW., Forty-first Street to Wisconsin Avenue.....	.....do.....	225.25
4127	Woodley Road, south of Cathedral Avenue.....	.....do.....	50.00
4130	Broad Branch Road, south of McKinley Street.....	.....do.....	129.00
4133	Yuma Street, between Wisconsin Avenue and Forty-second Street.....	.....do.....	223.75
4142	Swart Road, from Military Road to Broad Branch Road.....	.....do.....	36.50
4145	Broad Branch Road, near McKinley Street.....	.....do.....	307.00
4158	Grant Road, from Connecticut Avenue to Broad Branch Road.....	.....do.....	345.25
4165	Kanawha Street NW., east of Connecticut Avenue.....	.....do.....	62.50
4167	Murdock Mill Road, west of River Road.....	.....do.....	217.50
4027	Various roads (fall, 1913).....	Oiling.....	7,927.61
4171	Ridge Road, between Nebraska Avenue and New Cut Road.....	Repair.....	601.87
4241	Connecticut Avenue, between Cathedral Avenue and Chevy Chase.....	.....do.....	421.13
4243	Massachusetts Avenue, between California and Nebraska Avenue.....	.....do.....	107.48
4245	Thirty-third Street, Rittenhouse Street to District line.....	.....do.....	58.50
4242	Wisconsin Avenue, Thirty-seventh Street to District line.....	.....do.....	213.25
4253	Belt Road.....	.....do.....	99.87
4222	Pierce Mill Road, between Connecticut Avenue and Wisconsin Avenue.....	.....do.....	24.12
4125	Little Falls Road, between Chain Bridge and Conduit Road.....	.....do.....	58.25
4227	Various roads (spring, 1914).....	Oiling.....	2,711.20
4274	North roadway, Massachusetts Avenue, east of Macomb Street.....	Macadam.....	381.62
4000	Various roads.....	Watering.....	768.00
Dangerous holes and minor repairs.....			22,761.89
			9,426.86
			32,188.72
SECTION 2.—Rock Creek to North Capitol Street and Riggs Road.			
4007	Twentieth Street NW., between Park Road and Rock Creek Park.....	Repair.....	199.10
4008	Columbia Road, between Sherman and Georgia Avenues.....	.....do.....	366.37
4009	Lamont Street NW., between Eighteenth and Nineteenth Streets.....	Cobble gutters.....	324.65
4046	Eastern Avenue, between Cedar and Chestnut Streets.....	Catch basin.....	195.65
4050	Seventeenth Street NW., Park Road to Piney Branch.....	Repair.....	281.96
4067	Various roads (fall, 1913).....	Oiling.....	1,588.91
4078	Euclid Street, between Sherman Avenue and Eleventh Street.....	Repair and lay cobble gutter.....	233.00
4083	Ninth Street, between Sheridan and Tuckerman Streets.....	Terra-cotta pipe.....	40.47
4094	Milk House Ford Road.....	Repair.....	18.50
4102	Adams Mill Road, from Lanier Place to Ontario Road.....	Gutters.....	340.70
4117	Newton Street, west of Warder, and Sixth Street.....	.....do.....	450.61
4118	Gresham Place NW., between Georgia Avenue and Fifth Street.....	Repair.....	321.87
4128	West side Seventh Street NW., from Kennedy to Longfellow.....	Gutters.....	141.63
4129	Longfellow and Ninth Streets NW.....	Adjust gutter.....	40.25
4141	Varnum Street NW., between Seventh and Eighth Streets.....	Repair.....	16.04
4148	Upshur Street NW., between New Hampshire Avenue and Seventh Street.....	.....do.....	108.00
4157	Thirteenth and Shepherd Streets NW.....	Gutter and pipe.....	81.75
4164	W Street NW., between Fourth and Fifth Streets.....	Repair.....	41.60
4168	Shepherd Street NW., between Georgia Avenue and Fourteenth Street.....	.....do.....	114.75
4170	Carroll Street, Takoma Park.....	.....do.....	193.68
4178	Warder Street, north of Newton Street.....	.....do.....	151.88
4047	Decatur Street NW., between Sixteenth and Piney Branch Road.....	Widen roadway.....	53.98
4146	Tuberculosis Hospital grounds (repaid).....	Building roadway.....	589.38
4197	Warder Street, between Columbia Road and Irving Street.....	Repair.....	90.14
4027	Various roads (fall, 1913).....	Oiling.....	3,240.00
4180	Eighteenth Street NW., between Ontario Road and Summit Place.....	Repair.....	359.62
4166	Park Place, between Columbia Road and Hobart Place.....	.....do.....	16.25

Repairs to suburban roads, 1914—Continued.

Job No.	Location.	Work.	Cost.
SECTION 2.—Rock Creek to North Capitol Street and Riggs Road—Continued.			
4199	Nineteenth Street NW., between Biltmore Street and Mintwood Place.	Repair.....	\$15.75
4198	Lamont Street, east of Warder Street.....	do.....	94.13
4030	Shepherd Road.....	do.....	174.32
4031	Piney Branch Road.....	do.....	32.75
4083	Streets in Takoma Park.....	do.....	177.00
4084	Streets in Petworth.....	do.....	197.00
4085	Streets in Brightwood.....	do.....	176.58
4086	Streets in Saul's subdivision.....	do.....	127.25
4119	Rock Creek Church Road, between Shepherd Road and Riggs Road.	do.....	387.60
4233	Georgia Avenue, between Shepherd Road and District of Columbia line.	do.....	459.13
4028	Riggs Road.....	do.....	161.75
4029	Blair Road, between Cedar Street and Riggs Road.....	do.....	347.95
4082	New Hampshire Avenue, between Park Road and Rock Creek Church Road.	do.....	524.69
4234	Georgia Avenue NW., from Irving to Shepherd Streets.....	do.....	1,149.01
4223	Various roads (spring, 1914).....	Oiling.....	2,956.38
4000	Various roads.....	Watering.....	489.00
4235	Sixteenth Street, from Piney Branch north.....	Repair.....	143.31
4279	Various streets.....	Tarvia B.....	1,540.21
Dangerous holes and minor repairs.....			18,764.55
			13,056.50
			31,821.05
SECTION 3.—North Capitol Street to Eastern Branch.			
4006	Uhland Terrace NE., between Summit Place and Second Street.	Repair.....	46.48
4043	Brentwood Road, east of South Dakota Avenue.....	do.....	148.00
4044	Lawrence Street, between Fourteenth and Fifteenth, and Fifteenth, between Lawrence and Monroe Streets.	do.....	109.00
4064	Streets in Highview, between Lincoln Road, Second, T, and V Streets NE.	Improve.....	655.63
4111	Todd Place NE., between First and Second Streets.....	Grade and surface.....	470.32
4112	U Street NE., Lincoln Road to Second Street.....	do.....	703.56
4113	Second Street NE., Todd Place to V Street.....	do.....	639.05
4114	V Street NE., Lincoln Road to Second Street.....	do.....	232.34
4115	First Street NE., U Street to Todd Place.....	do.....	309.83
4132	Third Street NE., between V Street and Rhode Island Avenue.	Repair.....	152.19
4143	North Capitol Street, between V Street and Michigan Avenue.	Tarvia.....	260.50
4144	East side Lincoln Road, from V Street, 150 feet north.....	Grade.....	209.75
4156	Nineteenth and C Streets NE.....	Repair.....	66.19
4169	Queens Chapel Road, from Bunker Hill Road to District of Columbia line.	do.....	211.50
4172	Fourth Street NE., between V Street and Rhode Island Avenue.	do.....	365.62
4051	Randolph Street NE., east of Twelfth Street.....	Grade and gravel.....	565.12
4021	Various streets (fall, 1913).....	Oiling.....	2,844.41
4010	Harewood Road NE., between Rock Creek Church Road and Michigan Avenue.	Repair.....	672.85
4013	Michigan Avenue, between North Capitol and District of Columbia line.	do.....	2,182.12
4014	Rhode Island, North Capitol to South Dakota Avenue.....	do.....	1,348.14
4015	Sargeant Road.....	do.....	413.87
4016	Lincoln Road.....	do.....	354.65
4017	Streets in Brookland.....	do.....	2,685.62
4018	Streets in Ivy City.....	do.....	67.00
4019	Streets in Langdon.....	do.....	809.26
4244	Montello Avenue.....	do.....	59.38
4011	Bladensburg Road, between end of asphalt and District of Columbia line.	do.....	2,977.55
4225	Various roads (spring, 1914).....	Oiling.....	3,265.16
4000	Various roads.....	Watering.....	701.00
Dangerous holes and minor repairs.....			23,526.09
			3,403.01
			26,929.10
SECTION 4.—East and south of Eastern Branch.			
4022	Naylor Road and Walker Road.....	Grade and gravel.....	863.65
4023	Livingston Road.....	do.....	716.75
4037	Sixty-first Street between Dix and East Capitol Streets.....	do.....	555.46
4057	Eight Street SE. between Portland Street and Hamilton Road.	do.....	183.58

Repairs to suburban roads, 1914—Continued.

Job No.	Location.	Work.	Cost.
SECTION 4.—East and south of Eastern Branch—Cont'd.			
4065	Portland between Seventh and Eighth Streets, and Seventh, between Orange and Portland Streets.	Repair.....	\$199.50
4066	Bennings Road, Kenilworth Avenue, Sheriff Road, Nichols Avenue, Good Hope Road, and Pennsylvania Avenue (fall, 1913).	Oiling.....	1,784.80
4068	Morris Road between Nichols Avenue and Fifteenth Street.	Repair.....	395.11
4103	Wheeler Road between Alabama Avenue and District line.	.....do.....	28.50
4110	Pennsylvania Avenue and Branch Avenue.....	Protection fences.....	266.69
4149	Ninth and Tenth Place, south of Alabama Avenue.....	Gravel.....	350.90
4179	Bennings Road, west of bridge.....	Repair.....	609.81
4035	Eighteenth Street SE. between Minnesota Avenue and S Street.	Grade and gravel.....	597.44
4188	East side Minnesota Avenue, at intersection of Pennsylvania Avenue; Minnesota Avenue and Twenty-fifth Street; Minnesota Avenue and Twenty-third Street; and across Nicholson Street.	Crossings.....	38.79
4045	Giesboro Road.....	Repair.....	247.47
4069	Pennsylvania Avenue between Bowen Road and Eastern Branch.....	.....do.....	936.79
4205	Hillsdale.....	Protection fences.....	40.24
4116	Sheriff Road, Eastern Avenue, and St. Catharine Street.....	Repair.....	84.31
4077	Forty-third and Forty-fourth Streets NE., Sheriff Road to Deane Avenue.	.....do.....	205.69
4206	Sheriff Road, end of macadam to District line.....	.....do.....	15.37
4259	Nichols Avenue, near Congress Heights School.....	Repair culvert.....	46.87
4131	East side Thirtieth Street, south of R Street.....	Cobble gutters.....	25.00
4236	Nichols Avenue, Sheridan Road to Sterling Place.....	Repair.....	264.19
4237	Central Avenue from Bennings Road, east.....	.....do.....	13.00
4238	Kenilworth Avenue from Bennings Road to District line.....	.....do.....	55.12
4261	Ridge Road between Anacostia Road and District line.....	.....do.....	206.87
4226	Various roads (spring 1914).....	Oiling.....	1,916.31
4000	Various roads.....	Watering.....	386.00
	Total.....		11,042.21
	Dangerous holes and minor repairs.....		9,421.10
	Total.....		20,463.31

RECAPITULATION.

Section 1.....	\$32,188.72
Section 2.....	31,821.05
Section 3.....	26,929.10
Section 4.....	20,463.31
Repairs to steam roller No. 2.....	\$671.09
Repairs to steam roller No. 3.....	426.05
Repairs to steam roller No. 4.....	10.50
	<u>1,107.64</u>
Automobile.....	112,509.82
Coal.....	1,600.00
Tools.....	1,203.72
Lumber.....	952.36
Cylinder oil.....	143.75
Cotton waste.....	166.70
Cement.....	83.59
Fittings.....	37.52
Harper & Voigt (contract).....	54.69
Repairs to water wagons.....	718.35
Repairs to road machine.....	307.94
Terra-cotta pipe.....	103.05
Repairs to trestle at property yard.....	218.26
Steel tanks for oil wagons.....	223.96
Hardware.....	637.20
Ice.....	19.39
Limestone chips.....	83.26
Stone, including freight and hauling (not inclusive in jobs).....	364.54
Car tickets.....	16,479.81
Proposals.....	20.00
Lubricating oil.....	11.52
Adjusting fire hydrants.....	16.48
Kerosene oil.....	5.00
Oak stakes.....	132.86
Removing lamps.....	59.13
Repairs, supplies, etc., for superintendent suburban roads automobile.....	7.00
	<u>570.42</u>

Repairs, supplies, etc., for auto truck (field party).....	\$804.36
Repairs to motor cycles.....	260.60
Repairs to Cadillac automobile.....	257.70
Heating and unloading oil.....	316.03
Blacksmithing.....	277.85
Catch basins.....	89.80
Miscellaneous items and outstanding bills.....	1,916.72
Balance.....	126.48
Total.....	140,589.38
Less repayment on account of deposit for Tuberculosis Hospital (job 4146).....	589.38
Total.....	140,000.00

REPORT OF THE ENGINEER OF BRIDGES.

WASHINGTON, D. C., *September 10, 1914.*

SIR: I have the honor to submit the following report of the operations under my charge for the fiscal year ended June 30, 1914:

The expenditures under the construction and repair of bridges were as follows:

Bridge No.	Character of work.	Cost.
29	North approach to Connecticut Avenue Bridge (erecting lamp pedestals and lamps).	\$16.26
29	Connecticut Avenue (painting).....	221.84
82	Anacostia Road (reflooring).....	209.89
7	North approach to Aqueduct Bridge (building fence).....	31.21
188	Superstructure of Bridge, Grant Street east of Fifty-first Street.....	387.07
187	Superstructure of bridge, Dean Avenue, east of Fiftieth Street.....	455.62
1	Chain Bridge (reflooring).....	5,474.85
7	Aqueduct Bridge (repairing).....	173.92
40	Remove bridge crossing canal on line of N Street.....	155.13
54	East half of bridge (reflooring).....	4,659.02
123	Connecticut Avenue, between Keokuk and Legation Streets (extending culvert).....	115.86
34	P Street Bridge (reflooring).....	885.41
29	Connecticut Avenue Bridge (complete footwalks).....	1,671.00
7	Aqueduct Bridge (covering lower chord of through span).....	455.44
20	Pierce Mill Road crossing Rock Creek (reflooring).....	1,080.83
199	Watts Branch on line of Forty-eighth Place (steel concrete).....	1,395.97
35	M Street, over Rock Creek (reflooring).....	1,442.43
55	Anacostia Bridge.....	352.31
34	P Street Bridge (painting).....	213.58
	Dangerous holes and minor repairs:	
	July 1-15, 1913.....	\$101.50
	July 16-31, 1913.....	134.00
	Aug. 1-15, 1913.....	2.88
	Aug. 16-31, 1913.....	13.15
	Sept. 1-15, 1913.....	22.78
30	Sept. 16-30, 1913.....	24.99
34	Sept. 1 to Dec. 15, 1913.....	2.14
35	Sept. 1 to Nov. 30, 1913.....	20.31
	Sept. 1 to Oct. 15, 1913.....	43.95
35	Feb. 1-28, 1914.....	2.50
	Oct. 1-15, 1913.....	35.20
	Oct. 16-31, 1913.....	91.10
	Nov. 16-30, 1913.....	15.85
	Dec. 1-15, 1913.....	20.69
35	Jan. 1-31, 1914.....	2.75
	Dec. 16-31, 1913.....	75.01
	Jan. 1-15, 1914.....	49.69
	Mar. 1-15, 1914.....	86.87
	Mar. 16-31, 1914.....	229.54
	May 1-15, 1914.....	2.75
	June 1-15, 1914.....	10.98
30	June 16-30, 1914.....	19.51
	Lumber.....	1,008.14
	Bolts.....	25.49
	Tools.....	18.30
	Coal.....	29.99
	Paints and oils.....	28.26
	Photographic work.....	184.20
	Steel for stock.....	45.50
	Salaries, engineer of bridges' office.....	491.00
	Miscellaneous.....	3,127.39
	Total expended.....	24,545.99
	Amount received in repayments.....	80,080.16
	Balance.....	16,465.74
	Amount appropriated, "Construction and repair of bridges, 1914".....	534.26
		17,000.00

The following bridges were refloored: Anacostia Bridge, draw span; Chain Bridge; Pennsylvania Avenue Bridge over Anacostia River, east half; M Street Bridge over Rock Creek.

James Creek Canal has been in part filled and abandoned and the bridges which crossed it in the lines of M and N Streets were removed.

Three steel-concrete bridges were constructed over Watts Branch in the lines of Dean Avenue, Grant Street, and Forty-eighth Place.

The sundry civil bill for 1911-12 contained an appropriation of \$20,000 for the construction of a rock-face or bowlder bridge across Rock Creek in the Zoological Park, and provided that "Hereafter all plans and specifications for bridges in said park shall be prepared under the supervision of the engineer of bridges of the District of Columbia." Plans and specifications for a steel-concrete bridge having a clear span of 80 feet were prepared as stipulated and the same was constructed at a cost (exclusive of roadway, footways, and approaches) of \$13,637.36.

Expenditures for bridge work in the near future will be required as follows: Aqueduct Bridge, replacement or reconstruction because of inadequate capacity and defective approaches; Calvert Street Bridge, replacement because of inadequate capacity; M and P Street Bridges across Rock Creek, replacement of timber floor with permanent floor construction.

In addition to the above the smaller bridges with wooden floors should be provided with permanent floors.

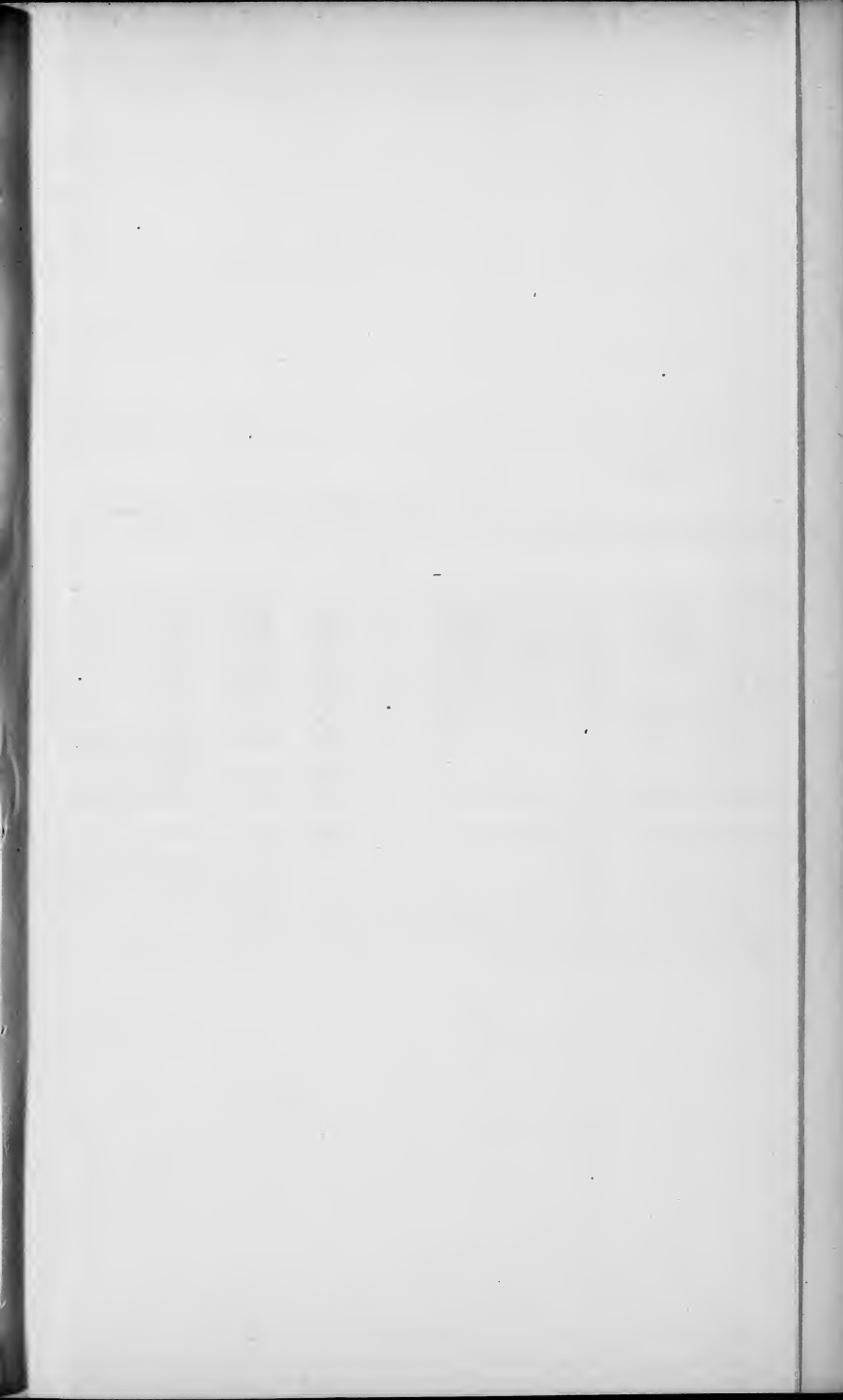
Very respectfully,

D. E. McComb,
Engineer of Bridges.

The ENGINEER OF HIGHWAYS.

TABLE A.—Street railroads in operation in District July 1, 1914.

Name of company.	Underground electric.		Overhead electric.	
	Double track.	Single track.	Double track.	Single track.
Washington Railway & Electric Co.:	<i>Miles.</i>	<i>Miles.</i>	<i>Miles.</i>	<i>Miles.</i>
Metropolitan.....	8.60	3.98	.....	.....
City & Suburban.....	3.86	2.36	5.58	.....
Brightwood.....	.....	.....	5.93	.....
Georgetown & Tennallytown.....	.....	.....	4.16	.....
Anacostia & Potomac River.....	7.65	.....	3.10	.....
Washington & Glen Echo.....	.....	.....	3.88	.....
Columbia.....	2.77	.....	4.12	0.89
Total.....	22.88	6.34	26.77	.89
Capital Traction.....	20.19	3.60	3.57	.....
Washington, Alexandria & Mount Vernon.....	.30	.46	.....	.....
East Washington.....	.....	.....	.....	.50
Washington Spa Springs & Greta.....	.....	.....	.....	2.65
Baltimore & Washington Transit Co.....	.....	.....	.....	2.33
Total.....	43.37	10.40	30.34	6.37
Tracks used in common by Capital Traction and Washington Railway & Electric Co.....	1.55	.....	.....	.....
Tracks used in common by Washington Railway & Electric and Washington, Alexandria & Mount Vernon Co.....	.40	.....	.....	.....
Total.....	45.32	10.40	30.34	6.37
Washington Railway & Electric Co. Extension:				
In operation.....	.....	.....	.....	.83
Under construction.....	.....	.....	.....	1.11



The following bridges were refloored: Anacostia Bridge, draw span; Chain Bridge; Pennsylvania Avenue Bridge over Anacostia River, east half; M Street Bridge over Rock Creek.

James Creek Canal has been in part filled and abandoned and the bridges which crossed it in the lines of M and N Streets were removed.

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Expenditures for bridge work in the near future will be required as follows: Aqueduct Bridge, replacement or reconstruction because of inadequate capacity and defective approaches; Calvert Street Bridge, replacement because of inadequate capacity; M and P Street Bridges across Rock Creek, replacement of timber floor with permanent floor construction.

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Name of company.	Underground electric.		Overhead electric.	
	Double track.	Single track.	Double track.	Single track.
Washington Railway & Electric Co.:	<i>Miles.</i>	<i>Miles.</i>	<i>Miles.</i>	<i>Miles.</i>
Metropolitan.....	8.60	3.98		
City & Suburban.....	3.86	2.36	5.58	
Brightwood.....			5.93	
Georgetown & Tennallytown.....			4.16	
Anacostia & Potomac River.....	7.65		3.10	
Washington & Glen Echo.....			3.88	
Columbia.....	2.77		4.12	0.89
Total.....	22.88	6.34	26.77	.89
Capital Traction.....	20.19	3.60	3.57	
Washington, Alexandria & Mount Vernon.....	.30	.46		
East Washington.....				.50
Washington Spa Springs & Greta.....				2.65
Baltimore & Washington Transit Co.....				2.33
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Washington Railway & Electric Co. Extension:				
In operation.....				.83
Under construction.....				1.11

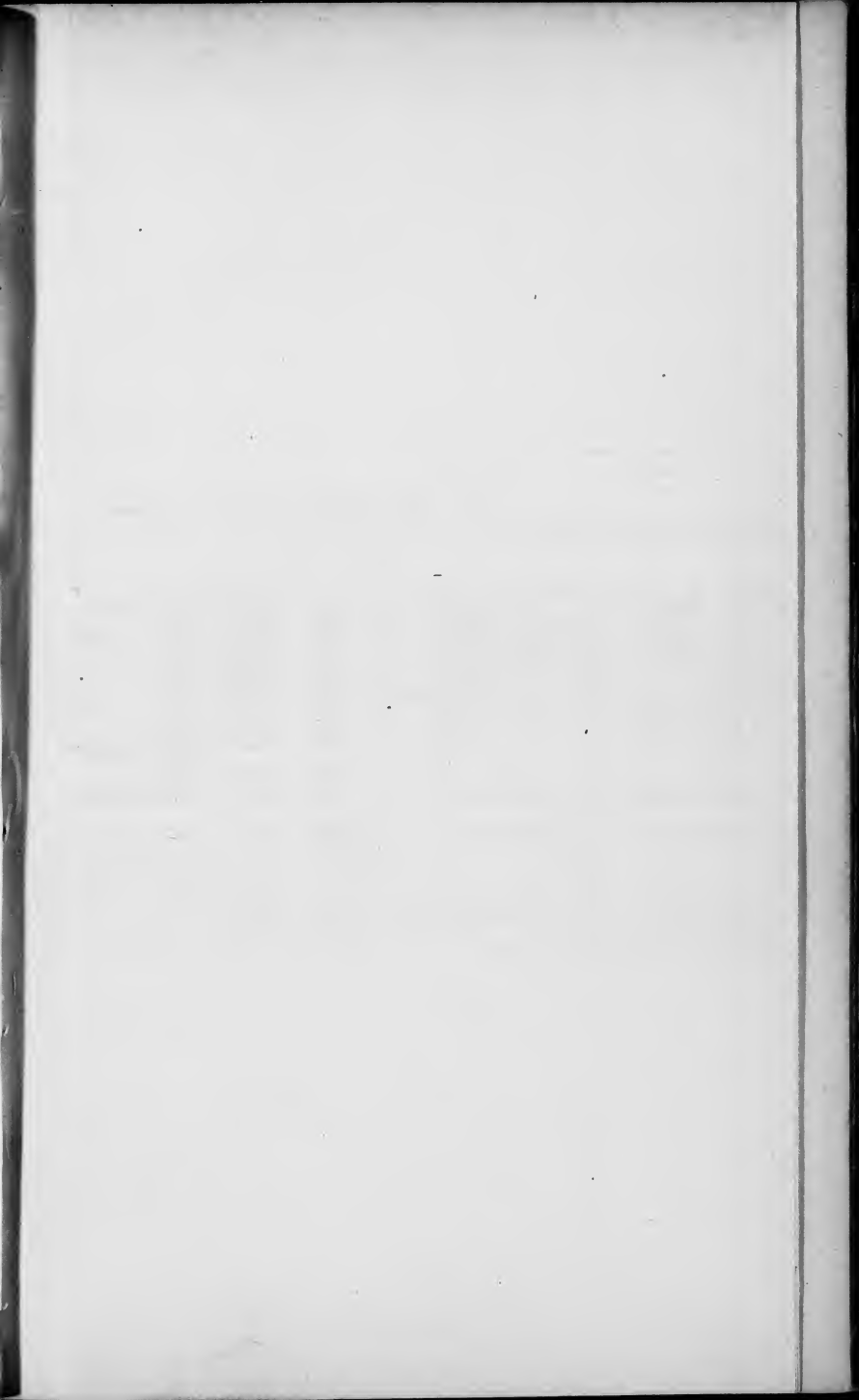


TABLE E.—Statement of contract work on streets and avenues for year ending June 30, 1914.

Street.	From—	To—	Section.	Kind of pavement.	Contract work.										Material.				Cost of material.	Cost of extra work.	Amount of contract.	Total cost of work.	Contractor.
					Square yards.	Length.	Contract No.	Price per square yard.	Grading.	Old cobble removed.	Old curb removed.	Curb set.	Curb reset.	Vitrified block gutters.	Vitrified block.	8 by 8 inch curb.	6 by 20 inch curb.	Circular curb.					
V. Eighteenth.	New Hampshire Avenue.	Seventeenth.	Northwest.	Asphalt.	2,285.82	Lin. ft. 689	5343	\$1.69	Cu. yds. 800.00	Sq. yds. 272.00	Lin. ft. 210.87	Lin. ft. 397.12	Lin. ft. 172.85	Sq. yds. 7,552	Number. 201.00	Lin. ft. 262.17	Lin. ft. 9.42	\$339.25		\$5,496.90	\$5,836.15	Cranford Paving	
W.	Fifteenth.	C. Virginia Avenue.	do.	do.	882.63	265	5343	1.69	455.00	88.00	127.00	253.30	63.04	2,732	253.83	2,262.82				2,000.65	2,262.82	Do.	
I.	Sixth.	Sixteenth.	do.	do.	1,786.02	460	5343	1.69	800.00	270.00	490.00	980.04	25.47	126.92	5,438	840.30	147.22	940.23		4,738.61	5,678.84	Do.	
K.	Seventh.	Seventh.	Southwest.	do.	1,697.98	513	5343	1.69	568.00	467.00	1,020.00	968.12	11.50	155.82	8,480	926.18	62.80	987.57		4,089.84	5,077.41	Do.	
Eighth.	First.	Florida Avenue.	Northwest.	do.	3,726.71	874	5343	1.69	1,100.00	947.00	1,626.00	1,674.50	67.26	290.83	12,506	1,672.23	6.28	1,607.78		8,394.69	10,002.47	Do.	
C.	Fourth.	Florida Avenue.	do.	do.	1,929.27	885	5343	1.69	583.00											4,454.40	5,101.30	Do.	
Pennsylvania Avenue (n. s.).	Fourteenth.	Fifteenth.	do.	do.	4,873.59	1,439	5343	1.69	405.00	5,226.00		561.43	667.16	192.18	7,920	478.45	87.15	646.90		10,879.92	11,219.82	Do.	
D.	New Jersey Avenue.	North Capitol.	Southwest.	do.	1,742.46	503	5343	1.69	409.00	421.00		44.50	104.14	352.89	15,174			339.90		10,879.92	11,219.82	Do.	
D.	North Capitol.	Delaware Avenue.	Northwest.	do.	1,398.71	443	5343	1.69	504.00				898.89	28.62			47.69	125.55	\$20.27	3,656.76	3,802.58	Do.	
V (1913).	Florida Avenue.	Tenth.	Northwest.	do.	1,245.23	376	5343	1.69	400.00				446.60		93.66	4,000	1,305.20	49.26	1,172.43	2,659.58	3,194.90	Do.	
Lexington Place.	Sixth.	Seventh.	Northwest.	Asphalt block.	951.68	288	5171	1.77	436.00	251.00	564.00	581.94	43.16	75.81	3,200	574.37	9.42	535.32		3,596.04	3,596.04	Do.	
A.	Massachusetts Avenue.	Fourteenth.	Southwest.	do.	1,749.27	617	5350	1.79	408.00				899.00							2,659.58	3,194.90	Do.	
Thirteenth.	do.	B.	do.	do.	1,920.85	491	5350	1.79	651.00	200.00	5.00		715.78							3,596.04	3,596.04	Do.	
C.	Seventeenth.	Eighteenth.	Northwest.	Bituminous concrete, macadam base.	1,997.71	488	5350	1.79	430.00	313.00			941.87							4,298.54	4,298.54	Do.	
South Carolina Avenue.	Eleventh.	Thirteenth.	do.	do.	1,857.52	635	5343	.97		384.00	253.00	508.07	73.00	163.69	7,145	482.79	25.12	567.83		4,194.91	4,194.91	Do.	
			do.	do.	4,081.77	946	5171	.99		108.00		1,024.66	703.64	209.52	9,150	1,000.12	53.43	1,051.15		2,849.93	3,417.76	Cranford Paving	
				Asphalt.			5343	.97															Do.
				Asphalt block.	22,720.10	6,735																	
				Bituminous concrete, stone base.	5,667.83	1,596																	
					5,939.29	1,581																	
Total.					34,327.22	9,912			7,949.00	8,947.00	4,085.00	8,152.92	5,482.35	1,968.02	86,367	7,734.47	497.79	8,576.08	20.27	72,842.44	81,438.79		
									</														

¹ Granite block.

² Charge to elimination of grade crossing.

³ \$2,275.28 charge to 1913 improvements and repairs.

TABLE E-1.—Statement of contract work on suburban streets and roads for year ending June 30, 1914.

Street.	From—	To—	Section.	Kind of improvement.	Contract work.										Material.				Cost of material.	Cost of extra work.	Amount of contract.	Cost of work.	Contractor.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
					Square yards.	Length.	Contract No.	Price per square yard.	Grading.	Old cobble removed.	Curb set.	Curb re-set.	Cobble gutters.	Vitrified block gutters.	Vitrified block.	8 by 8 inch curb.	6 by 20 inch curb.	Circular curb.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
Girard.	Fourteenth.	Fifteenth.	Northwest.	Asphalt.	2,127.92	Linear ft. 690	5343	\$1.69	Cu. yards. 787.00	Sq. yards. 561.50	Linear ft. 561.50	Linear ft. 561.50	Sq. yards. 561.50	Sq. yards. 561.50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

Broken stone for macadam furnished from District quarry; freight, hauling, spreading, and rolling by day labor shown in Table M. Charge to assessment and permit work: * \$544.39; * \$755.90; * \$706.14; * \$217.68; * \$5,388.58; total, \$7,612.69.

¹ Granite block.

² 45 feet 18-inch sewer pipe.

³ Cubic yards concrete.

⁴ Linear feet cement gutter.

⁵ Linear feet cement curb.

TABLE F.—Repairs to asphalt pavements for year ending June 30, 1914, under contract with Cranford Paving Co., No. 4794.

Street.	From—	To—	Section.	Kind of pavement.	Repairs to asphalt.							New gutters.					Curb work.					Total cost of street.	
					New pavement.	Resurfacing.	Base.	Binder.	Old pavement removed.	Grading.	Total cost of repairs.	Vitrified block gutters.	Removal of old material.	Number of blocks.	Cost of blocks.	Total cost of gutters.	Old curb removed.	Curb set.	Curb reset.	Cost of curb.	Total cost of curb work.		
Sixth Fourth.	East Capitol.	B.	South-east.	Asphalt.	Sq. yds. 2,653.14	Sq. yds. 31.97	Cu. yds. 3.36	Cubic feet. 1,675.52	Sq. yds. 1,675.00	Cu. yds. 273.00	\$5,033.16	Sq. yds. 204.82	Sq. yds. 1,205.00	8,950	\$189.29	\$488.48	Lin. ft. 226.70	Lin. ft. 4.50	Lin. ft. 226.70	\$5.78	\$98.62	\$5,620.26	
H (north roadway).	Third.	Twelfth.	North-east.	do.	518.39	13.40	250.00	8,931.00	6,623.00	26.00	10,739.84	464.71	465.00	20,380	159.04	1,121.02	2,140.00	2,140.16	332.39	1,719.12	2,742.96	\$14,623.82	
D.	Seventh.	Ninth.	South-west.	do.	1,687.75	444.37	18.00	714.40	1,656.00	170.00	3,896.78	160.46	160.00	7,100	159.04	413.87	182.00	2,140.16	851.67	56.52	420.08	\$4,730.73	
M.	New Jersey Avenue.	Sixth.	North-west.	do.		4,445.01	288.00	6,065.50	4,274.84	53.00	6,676.76	342.53	512.70	14,710	329.50	902.96	51.10	69.99	420.00	75.48	200.32	7,780.04	
John Marshall Place.	Pennsylvania Avenue.	D.	do.	do.		3,477.93	60.00	853.00	13,996.00	620.00	8,321.01	409.15	1,409.00	18,259	409.00	1,092.81	1,380.00	1,382.89	260.16	1,270.05	1,825.65	\$11,156.47	
Riggs Place.	Thirteenth.	B.	do.	do.		1,591.09	238.44	13.00	299.00	1,801.00	3,602.23	202.96	1,293.00	8,884	198.55	492.85			72.39		10.86	4,105.94	
Tenth.	Fourteenth.	C.	South-west.	do.		1,450.77	151.68	17.11	174.80	1,499.00	3,079.70	149.40	190.00	6,520	146.05	362.77			72.39		10.86	4,105.94	
Eighteenth.	K.	L.	North-west.	do.		1,248.68	12.00	22.80	1,170.57	97.00	2,444.53	93.95	194.00	4,000	89.60	225.84	226.00	323.86	713.79	110.94	505.43	\$3,947.90	
M.	Twenty-first.	M.	New Hampshire Avenue.	do.		1,170.57	75.18	91.20	1,248.50	97.00	2,444.53	93.95	194.00	4,000	89.60	225.84						2,670.37	
New Hampshire Avenue.	L.	M.	do.	do.		160.50	3,074.47	283.19	4,205.25	52.50	5,897.03	153.37	154.00	3,316	74.28	175.07	250.00	223.53	168.64	220.86	378.09	\$4,370.94	
Fifth.	M.	M.	South-east.	do.		1,682.51	98.60	2,566.84	2,029.00	48.00	3,683.88	85.49	85.50	7,754	215.92	253.00	1,001.50	1,022.76	814.60	1,267.47	377.28	\$4,777.08	
Pennsylvania Avenue.	Intersection of Eleventh.		do.	do.		711.54	13.74	22.80	1,706.90	11.00	1,395.39	18.37	19.00	800	17.92	45.19	253.00	223.10	166.27	221.68	19.07	\$1,459.65	
F.	Seventeenth.	Eighteenth.	North-west.	do.		116.62	1,867.59	111.47	2,527.00	1,955.25	28.50	3,240.29	91.11	91.00	6,364	142.55	297.96			377.17	110.53	\$3,648.78	
Twentieth.	O.	P.	do.	do.		1,092.17	31.85	1,444.00	1,092.00	11.00	1,437.01	82.06	82.23	3,600	80.64	197.19			270.50	46.97	1,682.07	\$2,705.50	
Maryland Avenue.	Intersection of Second and B.	S.	North-east.	do.		33.65	7.00	51.48	1,936.00	37.50	3,989.90	49.25	150.00	2,125	47.60	119.13			101.08	25.77	4,134.80	\$4,134.80	
V.	Thirteenth.	Fourteenth.	North-west.	do.		3,250.77	151.70	4,430.80	3,250.00	2.00	4,727.27	239.28	200.00	10,600	237.44	589.84			603.61	95.58	263.07	\$5,810.08	
H.	Twentieth.	Twentieth.	do.	do.		3,085.27	36.71	68.40	3,396.00	61.00	3,878.41		215.00			201.39	118.00	53.36	1,140.03	56.05	255.63	\$9,421.45	
Wallach.	Thirteenth.	Fourteenth.	do.	do.		1,819.74	69.95	2.70	136.80	36.70	7,990.54	232.44		9,235	206.86	509.03	730.00	720.62				\$8,281.05	
H.	Twentieth.	Twenty-second.	do.	do.		3,368.21	183.93	273.60	2,926.00	240.00	8,758.03	365.68	181.00	15,500	347.20	849.91			88.33	587.61	88.33	\$8,281.05	
Q.	Fourteenth.	Sixteenth.	do.	do.		3,607.66	52.39	60	91.20	979.00	377.00	8,536.68	423.12		17,600	394.24	946.64	1,627.00	1,649.71	177.80	1,311.38	\$10,162.39	
N.	Tenth.	Eleventh.	do.	do.		851.24	78.20	1,026.00	851.00		1,423.98	42.67	106.00	4,500	100.80	206.90			38.00	4.71	353.20	\$64.09	
Twenty-first.	R.	Florida Avenue.	do.	do.		1,310.78	56.00	1,368.00	90.00	10.00	1,588.64	150.78	39.50	6,330	141.79	346.85	460.00	458.41	35.89	366.18	586.89	\$2,217.77	
Eighteenth.	F.	Pennsylvania Avenue.	do.	do.		339.07	2,583.65	188.36	3,986.00	2,613.00	157.00	5,910.91	182.03	182.00	7,750	173.00	509.63			102.00	33.30	1,908.79	\$1,908.79
Do.	E.	F.	do.	do.		1,957.60	92.80	2,624.00	1,796.00	77.00	2,885.33	136.40	142.00	5,750	128.80	331.04	394.00	402.34	1,061.64	351.99	878.13	\$7,318.67	
R.	Seventeenth.	New Hampshire Avenue.	do.	do.		1,601.26	24.88	22.80	22.80	37.00	3,395.90	166.15	236.00	7,000	156.80	413.88			906.05		742.14	1,168.06	\$7,318.67
New York Avenue.	North Capitol.	First.	North-east.	Bituminous concrete.		3,127.50	238.80		3,128.10		4,654.50	231.63	231.00	10,600	237.44	574.29			100.00		47.10	\$5,275.89	
M (north roadway).	Thirtieth.	Thirty-second.	North-west.	do.		1,652.67	75.50		1,515.50		2,179.19		14.50			30.77						\$2,209.96	
Entrance to Mall.	(Seventh, Twelfth, and Fourteenth.)		do.	do.		825.42	22.80		825.00		1,008.46								38.09	277.38	48.98	\$1,736.30	
Linworth Place.	C.	D.	South-west.	do.		1,071.10	12.37	4.58	1,071.42	30.00	1,994.79	151.32	151.00	6,475	145.04	364.41	113.00	131.85	501.00	22.61	204.81	\$2,564.01	
M.	South Capitol.	New Jersey Avenue.	South.	do.		4,985.27	42.81	12.00	4,985.00	580.00	9,537.51	472.42	1,472.00	20,130	450.91	1,140.35	111.00	108.05	1,661.06		481.05	\$11,158.91	
H.	Delaware Avenue.	Third.	South-west.	do.		3,467.36	361.08	19.00	350.00	22.00	7,129.35	370.74	395.00	15,670	351.01	901.50	215.00	130.03	1,672.16	165.91	722.06	\$8,752.91	
Asphalt.						32,788.36	32,353.28		25,289.82				12,200.00										
Bituminous concrete.						10,349.15	5,219.23		9,710.00				3,337.43										
Total.						43,137.51	37,572.51	2,288.86	45,302.67	62,770.11	3,741.24	149,339.27	6,032.73	5,537.43	2,685.13	6,002.86	15,230.43	15,357.13	10,318.51	12,927.38	8,248.41	16,156.97	\$180,726.67

1 Square yards asphalt block.

Payable from assessment and permit: \$2,667.33; \$1,695.10; \$282.96; \$1,152.17; \$371.87; \$1,062.88; \$521.37; \$2,042.99; total, \$9,796.67. Payable from sidewalks and curbs: \$73.27; \$387.26; total, \$460.53.

Work by municipal plant:

112,160 cubic feet old-material mixture, at 50 cents.

Myrtle Street N.E., North Capitol to First Street (resurfacing):

1,005 square yards old-material mixture, at 39 cents.

650 square yards bituminous concrete, at 78 cents.

Total.

MINOR REPAIRS.

\$56,080.00

391.95

510.25

56,982.20

March 30, 1914, under contract with Cranford Paving Co., No. 4794.

New gutters.					Curb work.					Total cost of street.	Repairs completed.	Original pavement.			
Crifted lock fters.	Removal of old material.	Number of blocks.	Cost of blocks.	Total cost of gutters.	Old curb removed.	Curb set.	Curb reset.	Cost of curb.	Total cost of curb work.			Character of pavement.	Year laid.	Year resurfaced.	Contractor.
<i>yds.</i>	<i>Sq. yds.</i>				<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>								
04.82	1 205.00	8,950	\$189.29	\$488.48						\$5,620.26	July 8, 1913	Asphalt block.....	1885		P. Maloney.
50.83	1 161.00	7,000	159.80	390.03	25.00	4.50	226.70		210.40	3,978.13	Aug. 20, 1913	do.....	1904		Washington Asphalt Block & Tile Co.
34.71	465.00	20,380	456.51	1,121.02	2,140.00	2,140.16	332.39	1,719.12	2,742.96	14,623.82	Aug. 21, 1913	Asphalt.....	1883		H. L. Cranford.
30.46	1 160.00	7,100	159.04	413.87	182.00	227.15	851.67	56.52	420.08	4,730.73	Sept. 4, 1913	Asphalt block.....	1896		Washington Asphalt Block & Tile Co.
22.53	512.70	14,710	329.50	902.96	51.10	69.99	420.00	75.48	209.32	7,780.04	Sept. 16, 1913	Asphalt.....	1881		H. L. Cranford.
09.15	1 409.00	18,250	409.00	1,099.81	1,380.00	1,382.89	260.16	1,270.05	1,825.65	11,156.47	Sept. 18, 1913	Asphalt block.....	1887		P. Maloney.
02.96	1 293.00	8,864	198.65	492.85			72.39		10.86	4,105.94	Sept. 22, 1913	do.....	1886		Permit work.
09.40	1 990.00	6,520	146.05	362.77	226.00	323.86	713.79	110.94	505.43	3,947.90	Sept. 23, 1913	do.....	1886		P. Maloney.
03.95	1 94.00	4,000	89.60	225.84						2,670.37	Sept. 24, 1913	do.....	1886		Do.
06.39	7.00	3,316	74.28	175.07	250.00	223.53	168.64	220.86	378.09	3,370.94	Oct. 16, 1913	Asphalt.....	1875	1886	J. W. Vandenburg.
03.37	154.00	7,754	173.69	408.96	1,001.50	1,022.76	24.81	814.60	1,267.47	7,483.46	Oct. 23, 1913	do.....	1879		J. S. Baldwin.
05.49	85.50	3,731	83.57	215.92	253.00	223.10	166.27	221.68	377.78	4,277.08	do.....	do.....	1883		H. L. Cranford.
08.37	1 19.00	800	17.92	45.19			66.75		19.07	1,459.65	do.....	Asphalt block.....	1863		Washington Asphalt Block & Tile Co.
01.11	91.00	6,364	142.55	297.96			377.17		110.53	3,648.78	Nov. 12, 1913	Asphalt.....	1881		J. S. Baldwin.
02.06	82.23	3,600	80.64	197.19			270.50		46.97	1,682.07	Apr. 21, 1914	do.....	1873	1895	J. W. Vandenburg.
09.25	1 50.00	2,125	47.60	119.13			101.68		25.77	4,134.80	May 7, 1914	Asphalt block.....	1887		P. Maloney.
08.28	200.00	10,600	237.44	589.84	76.00	97.35	603.61	95.58	263.97	5,581.08	June 9, 1914	Asphalt.....	1891		Cranford Paving Co.
02.44	215.00			201.39	118.00	53.36	1,140.03	56.05	235.63	4,335.43	May 6, 1914	do.....	1895		Do.
06.22	1 186.00	9,235	206.86	509.03	730.00	720.62	88.33	587.61	88.21	4,081.05	May 4, 1911	Asphalt block.....	1872	1880	Abbot Paving Co.
05.68	181.00	15,509	347.20	849.91	1,627.00	1,649.71	177.80	1,311.38	2,074.45	11,692.59	May 28, 1914	Abbot coal tar.....	1872	1880	Laid by day labor.
03.12		17,600	394.24	946.64	38.00	4.71	353.20	4.95	64.09	9,547.41	June 6, 1914	Coal tar.....	1874	1895	Abbot Paving Co.
02.67	106.00	4,500	100.80	206.90	460.00	458.41	35.89	366.18	538.89	2,217.77	Apr. 13, 1914	Asphalt.....	1880		J. P. Cranford & Co.
07.78	39.50	6,320	141.79	346.85			102.00		33.30	1,968.79	Apr. 16, 1914	Asphalt, bituminous base.....	1880		J. S. Baldwin.
02.03	187.00	7,750	173.60	509.63	394.00	402.24	1,061.64	351.99	878.13	7,318.47	Apr. 30, 1914	Asphalt.....	1881		Cranford Paving Co.
03.40	112.90	5,759	128.80	331.04	907.63	906.05	22.08	742.14	1,168.06	4,384.43	do.....	do.....	1881		A. L. Barber.
06.15	236.00	7,000	156.80	413.88						3,809.78	Apr. 14, 1914	Asphalt, bituminous base.....	1890		Cranford Paving Co.
01.63	231.00	10,600	237.44	574.20			100.00		47.10	5,275.89	Aug. 25, 1913	Asphalt.....	1891		Do.
	14.50			30.77						2,209.96	Oct. 21, 1913	30 to 31 asphalt.....	1904		Brennan Construction Co.
												31 to 32 asphalt.....	1898		Barber Asphalt Co.
01.32	1 151.00	6,475	145.04	364.41	113.00	131.85	501.00	48.98	127.84	1,736.30	Oct. 30, 1913	Granite block.....	1872		
02.42	1 472.00	20,130	450.91	1,140.35	111.00	108.05	1,661.06		204.81	2,564.01	May 11, 1914	Asphalt block.....	1875		Washington Asphalt Block & Tile Co.
01.74	339.00	15,670	351.01	901.50	215.00	130.03	1,672.16	165.91	722.06	8,752.91	June 1, 1914	do.....	1895		Do.
	12,200.00											Asphalt, bituminous base.....	1906		Cranford Paving Co.
	3,337.43														
04.73	5,537.43	2,685.13	6,002.86	15,230.43	15,357.13	10,318.51	12,927.38	8,248.41	16,156.97	180,726.67					

88; *\$521.37; 10 \$2,042.99; total, \$9,796.67. Payable from sidewalks and curbs: *\$73.27; *\$387.26; total, \$460.53.

* Cubic yards.

REPAIRS.

	\$56.080.00
	391.65
	101.25
	56.982.20

TABLES B AND C.—Character and extent of roadway pavements July 1, 1914.

SQUARE YARDS.

Section.	Asphalt.	Asphalt block.	Bituminous concrete, concrete base.	Bituminous concrete, stone base.	Cement concrete.	Granite and rubble.	Vitrified block.
Northwest, city.....	1,706,843	26,455	9,674	6,372	.....	154,833	18,000
Northeast, city.....	299,170	227,603	3,127	.....	.....	18,289	3,882
Southeast, city.....	178,157	226,114	4,985	4,082	.....	42,872	.....
Southwest, city.....	229,580	43,382	5,360	.....	.....	173,980	3,138
Georgetown.....	138,864	23,075	1,653	905	.....	43,453	515
Northwest, suburban.....	240,252	79,087	21,404	36,680	24,827	25,915	.....
Northeast, suburban.....	58,347	6,925	14,354	.....	5,038	5,971	.....
Southeast, suburban.....	6,251	.....	.....	3,049	.....	4,667	.....
Total.....	2,857,464	632,641	60,557	51,088	29,865	469,980	25,535

Section.	Cobble.	Macadam, estimated.	Gutters on asphalt streets.	Gutters on bituminous concrete streets.	Pavements maintained by street railroads.	Total.
Northwest, city.....	33,146	60,000	111,962	1,128	279,432	2,407,845
Northeast, city.....	.....	92,000	25,427	231	69,316	739,045
Southeast, city.....	13,122	75,000	13,075	682	48,328	606,417
Southwest, city.....	21,865	35,800	21,018	651	56,820	591,594
Georgetown.....	13,988	6,800	4,248	101	31,816	265,418
Northwest, suburban.....	.....	1,350,000	22,228	5,461	54,668	1,860,522
Northeast, suburban.....	.....	300,000	4,881	1,049	9,000	405,565
Southeast, suburban.....	.....	50,000	1,678	272	7,370	73,287
Total.....	82,121	1,969,600	204,517	9,575	556,750	6,949,693

MILEAGE.

Section.	Asphalt.	Asphalt block.	Bituminous concrete, concrete base.	Bituminous concrete, stone base.	Cement concrete.	Granite and rubble.	Vitrified block.
Northwest, city.....	87.75	1.57	0.51	0.24	.....	8.00	0.80
Northeast, city.....	16.00	9.60	.19	.....	.....	.91	.24
Southeast, city.....	9.61	11.30	.27	.17	.....	2.50	.....
Southwest, city.....	12.45	2.50	.29	.....	.....	8.87	.27
Georgetown.....	8.00	1.51	.19	.06	.....	3.03	.03
Northwest, suburban.....	13.46	4.25	1.06	2.00	1.46	1.13	.....
Northeast, suburban.....	3.87	.63	.97	.....	.20	.....	.....
Southeast, suburban.....	.46	.....	.....	.21	.....	.53	.....
Total.....	151.60	31.36	3.48	2.68	1.66	25.58	1.34

Section.	Cobble.	Macadam, estimated.	Gravel and unimproved.	Total.
Northwest, city.....	1.60	3.00	3.12	106.59
Northeast, city.....	.....	5.20	5.70	37.84
Southeast, city.....	.66	4.00	10.00	38.51
Southwest, city.....	1.08	1.68	2.00	29.14
Georgetown.....	.78	.39	.76	14.75
Northwest, suburban.....	.....	83.42	60.72	167.50
Northeast, suburban.....	.....	20.66	49.21	76.15
Southeast, suburban.....	.....	3.77	34.52	39.49
Total.....	4.12	122.12	166.03	509.97

¹ 9.72 miles rated as second-class macadam.

TABLE G.—Charges against street railroads (work in connection with paving and resurfacing).

WASHINGTON RAILWAY & ELECTRIC CO.

Street.	From—	To—	Section.	Amount.
Third.....	Florida Avenue.....	T.....	Northwest..	\$517.71
H (north side).....	Third.....	Twelfth.....	Northeast..	699.29
M.....	New Jersey Avenue.....	Sixth.....	Northwest..	39.84
New York Avenue.....	North Capitol.....	First.....	Northeast..	466.58
M.....	Thirtieth.....	Thirty-second.....	Northwest..	7.07
Fourteenth (west).....	B (north).....	B (south).....	Northwest..	19.16
N.....	Tenth.....	Eleventh.....	Northwest..	10.48
Eleventh.....	Clifton.....	Columbia Road.....	do.....	644.92
Minor repairs on various streets, District of Columbia repair force				3,078.04
1,752 cubic feet material in bulk at portable plant.....				388.67
Total.....				5,871.76

CAPITAL TRACTION CO.

Eighth.....	K.....	Florida Avenue.....	Northeast..	\$492.37
Pennsylvania Avenue.....	Fourteenth.....	Fifteenth.....	Southeast..	11.81
H (north side).....	Third.....	Twelfth.....	Northeast..	19.21
Eighth.....	L.....	M.....	Southeast..	228.44
F.....	Seventeenth.....	Eighteenth.....	Northwest..	281.38
Pennsylvania Avenue.....	Intersection of Eleventh	.....	Southeast..	23.72
M.....	Thirtieth.....	Thirty-second.....	Northwest..	205.31
Seventh (west).....	B (north).....	B (south).....	.....	22.05
Eighteenth.....	E.....	F.....	Northwest..	14.87
Do.....	F.....	Pennsylvania Avenue	do.....	32.23
H.....	Pennsylvania Avenue.....	Twentieth.....	do.....	64.78
Colorado Avenue.....	Fourteenth.....	Sixteenth.....	do.....	11.88
Minor repairs on various streets, District of Columbia repair force.....				2,429.22
Total.....				3,836.82

BALTIMORE & WASHINGTON TRANSIT CO.

Kennedy.....	Georgia Avenue.....	Ninth.....	Northwest..	\$27.30
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WASHINGTON, ALEXANDRIA & MOUNT VERNON CO.

Minor repairs on various streets, District of Columbia repair force.....	\$470.08
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TABLE H.—Work done by day labor under the appropriation "Repairs to streets, avenues, and alleys," July 1, 1913, to June 30, 1914.

Brick sidewalk relaid.....	.....square yards..	19,761
Asphalt block paved.....	do.....	18,249
Asphalt block repaved.....	do.....	28,158
Vitrified block paved.....	do.....	900
Vitrified block repaved.....	do.....	1,630
Macadam roadway.....	do.....	5,000
Curb reset.....	.....linear feet..	2,501
Flag laid.....	do.....	225
Flag relaid.....	do.....	12,038
Granite block laid.....	.....square yards..	4,855
Asphalt tile relaid.....	do.....	1,761
Cement walk relaid.....	do.....	1,033
Grading.....	do.....	692
Graveling.....	do.....	866
Cobble relaid.....	do.....	3,683
Dangerous holes repaired.....	do.....	4,500
Labor.....		\$38,346.05
Material.....		28,469.45
Total.....		66,815.50

RECAPITULATION.

Northwest section.....	\$9,130.64
Southwest section.....	8,281.15
Northeast section.....	22,115.47
Southeast section.....	27,288.24
	66,815.50

TABLE I.—Regular permit, 1914.

Job No.	Location.	For whom done.	Grading.	Cement walk.	Curb reset.	Curb set.		Brick sidewalk relaid.	Cost.
						6 by 20 inches.	8 by 8 inches.		
			<i>Cu. yds.</i>	<i>Sq. yds.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Sq. yds.</i>	
2000	East side Ninth Street NW., south of Market Space.	Washington Market Co.		326.51	236.79				\$443.40
2001	2522-2532 E Street NW.	J. V. Pilling.			170.00			100	85.47
2002	The Albemarle, Seventeenth and T Streets NW.	T. F. Schneider.		34.00					34.45
2003	Ninth Street NW., from Rittenhouse Street to Quiniana Place.	Brightwood Building Corporation.		93.80					98.49
2006	A Street NE., from Fourteenth Street and Fourteenth A Street from A to alley.	Chas. A. Peters.				348.28			424.45
2007	5316 Eighth Street NW.	Brightwood Park M. E. Church.	89	240.00					427.60
2008	North and south side of Hobart Street west from Mount Pleasant Street.	L. E. Breuninger.					933.55		1,074.45
2009	2302 S Street NW., rear on Decatur Street.	W. P. Lipscomb Co.		186.52	17.00		25.30		335.00
2010	Eight Street NW., north of E Street.	H. Rozier Dulaney.			20.00			23	16.54
2011	1946 Baltimore Street NW.	Jos. J. Moebis.					144.89		236.58
2012	235 South Capitol Street.	Mrs. Bailey.		17.93					22.00
2013	North side C Street SE., between Twelfth and Thirteenth Streets.	Harry A. Kite.		192.05					187.05
2014	North side Florida Avenue NE., west from Eckington Place.	Judd & Detweiler (Inc.).		159.97	15.20				188.18
2016	Alley, square 804.	F. W. Ottinger.	95						29.40
2017	North side Quarry Road, west of Columbia Road.	J. I. Peyser.		174.62					214.06
2018	Sherman Avenue NW., between Barry Place and Euclid Street.	C. T. Umball.		66.73					81.79
2019	First and T Streets NW., square 3109.	J. R. Herwood.		137.49	6.00				135.48
2021	1814-1826 Kilbourne Street.	Geo. Y. Worthington.				154.00			235.26
2022	443-451 Randolph Street.	Alex. Miller.		88.80					108.85
2023	Second Street and Maryland Avenue SW.	And. J. Hamilton.		494.07		17.4			567.14
2024	1730 M Street NW.	Harry W. Ardman.		69.77				84.00	84.00
2025	North side Fairmont Street, lot 46, square 2667.	Alonzo O. Bliss.		293.74					224.73
2026	West side Fourteenth Street NW., Parkwood Place to Perry.	Florens Morrell.		53.72					65.86
2027	U Street, side lot 9, square 3534.	W. H. De Lacy.		57.31				70.26	70.26
2028	2810 Adams Mill Road.	M. O. Davis.		50.17		71.00			153.81
2029	Lot 411, Adams Mill Road.	Geo. W. Ashley.		52.25				64.00	64.00
2030	Front of lot 109, square 2581.	Jos. A. Holmes.		16.29				19.97	19.97
2031	2012 Eleventh Street NW.	W. A. Kimmel.		20.00				134.00	134.00
2032	1317-1321 Monroe Street.	John M. Ruppert and Alex. C. Mulaney.		38.10				43.99	43.99
2033	1439-1441 Fairmont Street.	H. H. Bailey.		47.46					46.22

TABLE I.—Regular permit, 1914—Continued.

Job No.	Location.	For whom done.	Grading. Cu. yds.	Cement walk. Sq. yds.	Curb reset. Lin. ft.	Curb set.		Brick sidewalk relaid.	Cost.
						6 by 20 inches. Lin. ft.	8 by 8 inches. Lin. ft.		
2034	North side Farragut Street, from Fourteenth Street east to alley.	Lynchburg Investment Co.	.....	96.59	.....	.....	.....	Sq. yds.	\$26.59
2036	Front lot 13, square 2520, California Street.	Le Roy Golf.	.....	56.00	.....	51.00	.....	.....	102.74
2037	412 Adams Mill Road.	David .. hile	.....	36.55	.....	.....	.....	.....	44.80
2038	West side Fourteenth Street NW., from Hamilton to Ingraham Street.	Lynchburg Investment Co.	.....	220.89	.....	.....	.....	.....	270.78
2039	811-821 .. east Virginia Avenue.	W. C. and H. Miller	.....	.....	12.00	113.00	.....	.....	142.87
2040	238-242 Park Road.	A. C. Cross Construction Co.	.....	51.10	.....	.....	.....	.....	12.65
2041	Fifth Street, front of lot 16, square 175.	.....	.....	57.00	.....	.....	.....	.....	12.65
2042	South side Fourteenth Street NW., from Mount Pleasant to Macomb Street.	J. E. Breuninger.	.....	.....	.....	.....	574.00	.....	619.02
2043	West side Mount Pleasant Street NW., between Kilbourne and Macomb Streets.	Thos. Armat.	.....	79.19	.....	.....	.....	.....	97.07
2044	2942 Macomb Street.	H. J. Gensler	.....	37.60	.....	.....	.....	.....	46.10
2045	K Street S .. east of First Street.	Michl. King.	.....	26.00	.....	.....	.....	.....	31.87
2046	Fifth Street NW., south of Upshur, and Upshur Street west of Fifth Street.	B. H. Graver	.....	181.06	.....	.....	.....	.....	221.95
2047	South side of Hobart Street, west of Mount Pleasant Street.	L. E. Breuninger.	.....	.....	.....	.....	574.00	.....	619.02
2048	South side Taylor Street NW., between Fifth and Sixth Streets.	A. F. Fox & Co.	39	66.00	.....	.....	.....	.....	100.00
2049	Adjacent to 131 C Street SE. (17 yards concrete wall).	W. A. Landvoigt.	.....	.....	.....	.....	.....	.....	46.00
2050	Northwest corner First and F Streets SW.	Thos. A. Costello.	.....	183.54	141.40	55.00	.....	.....	245.25
2051	1818 R Street N ..	Clarke .. egg man	.....	45.73	.....	.....	.....	.....	57.08
2053	4127 Eighth Street NW.	Fred. A. Heilmuller	.....	88.45	.....	.....	.....	.....	108.43
2054	112-118 Sixteenth Street NW.	S. D. P. Bailey	.....	32.00	.....	.....	.....	.....	35.57
Total.			223	4,177.22	638.39	809.68	2,251.74	123	8,779.14

TABLE K.—*Assessment work, 1914.*

[illegible]

TABLE K.—Assessment work, 1914—Continued.

Job No.	Location.	Grading. Cu. yds.	Cement walk. Sq. yds.	Curb set.			Curb reset. Lin. ft.	Vitrified block paved. Sq. yds.	Asphalt block paved. Sq. yds.	Brick sidewalk laid. Sq. yds.	Cement curb set. Lin. ft.	Old blue- stone curb. Lin. ft.	Cost.
				6 by 20 inches. Lin. ft.	8 by 8 inches. Lin. ft.	Old. Lin. ft.							
3112	South side Rhode Island Avenue NW., between Florida Avenue and New Jersey Avenue.		364.12										\$366.10
3113	South side K Street NE., between Sixth and Seventh Streets.		732.58										715.02
3114	Both sides K Street NE., between Fifth and Sixth Streets.		471.41										400.67
3115	Both sides D Street NW., between New Jersey Avenue and North Capitol Street.				898.89								1,088.05
3116	East side Ninth Street NW., from Webster Street to Kansas Avenue.		188.31										194.06
3119	South side A Street SE., between Fifth and Sixth Streets.		263.95										257.05
3123	Nichols Avenue from Portland to Orange Streets and Portland Street from Nichols Avenue to Ninth Street.		1,415.94					363.00					1,741.19
3125	North and South Alley square 70.		68.73										696.32
3126	Seventeenth and Franklin Streets NE.												84.25
3131	South side Webster Street NW., from Kansas Avenue to Ninth Street.		114.11										139.88
3132	South side of Ward Street NW., between Elev- enth and Thirteenth Streets.		107.79										105.74
3135	South side G Street NW. between Thirteenth and Fourteenth Streets.		334.87										327.87
3136	West side Sixth Street SW., between H and I Streets.		294.80	9.50			315.50						390.31
3137	Both sides I Street SW., between Sixth and Seventh Streets.		1,127.71				24.00						2,309.64
3139	Alley, square 2830.	640.00						861.50					2,132.95
3140	Alley, square 2857.	600.00							250.00				1,131.71
3142	Both sides Monroe Street NE., between Eighth and Ninth Streets.		334.79				374.54						510.78
3144	North side Florida Avenue NW., from Bohrer Street to Georgia Avenue.		187.86										194.62
3146	North side Newton Street NE., between Fir- teenth and Sixteenth Streets.		307.53										421.45
3147	South side Randolph Street NE., between Twelfth and Thirteenth Streets.		341.67					305.00					446.96
3150	Alley, square 2709.	34.00							420.00				1,811.86

TABLE K.—*Assessment work, 1914*—Continued.

Job No.	Location.	Grading.	Cement walk.	Curb set.			Curb reset.	Vitrified block paved.	Asphalt block paved.	Brick sidewalk laid.	Cement curb set.	Old blue-stone curb.	Cost.
				6 by 20 inches.	8 by 8 inches.	Old.							
		Cu. yds.	Sq. yds.	Lin. ft.	Lin. ft.	Lin. ft.	Lin. ft.	Sq. yds.	Sq. yds.	Sq. yds.	Lin. ft.	Lin. ft.	
3112	South side Rhode Island Avenue NW., between Florida Avenue and New Jersey Avenue.		364.12										\$386.10
3113	South side K Street NE., between Sixth and Seventh Streets.		732.58										715.02
3114	Both sides K Street NE., between Fifth and Sixth Streets.		471.41										460.67
3115	Both sides D Street NW., between New Jersey Avenue and North Capitol Street.				898.89								1,088.05
3116	East side Ninth Street NW., from Webster Street to Kansas Avenue.		188.31										194.06
3119	South side A Street SE., between Fifth and Sixth Streets.		263.95										257.05
3123	Nichols Avenue, from Portland to Orange Streets and Portland Street from Nichols Avenue to Ninth Street.		1,415.94										1,741.19
3125	North and South Alley, square 70.							365.00					696.32
3126	Seventeenth and Hamlin Streets NE.		68.73										84.25
3131	South side Webster Street NW., from Kansas Avenue to Ninth Street.		114.11										139.88
3132	South side Girard Street NW., between Eleventh and Thirteenth Streets.		107.73										105.74
3135	South side G Street NW., between Thirteenth and Fourteenth Streets.		324.87										327.87
3136	West side Sixth Street SW., between H and I Streets.		294.80	9.50			315.50						390.31
3137	Both sides I Street SW., between Sixth and Seventh Streets.		1,127.71		986.12		24.00						2,309.64
3138	Alley, square 2839.	640.00						861.50					2,132.95
3140	Alley, square 2857.	600.00						250.00					1,131.71
3142	Both sides Monroe Street NE., between Eighth and Ninth Streets.		334.79				374.54						510.78
3144	North side Florida Avenue NW., from Bohrer Street to Georgia Avenue.		187.86										184.52
3146	North side Newton Street NE., between Fifteenth and Sixteenth Streets.		307.53										421.45
3147	South side Randolph Street NE., between Twelfth and Thirteenth Streets.		341.67										446.96
3150	Alley, square 2709.	34.00						305.00	420.00				1,811.86

3171	North side Rock Creek Church Road, between Georgia Avenue and Seventh Street.	630.09			150.00		590.76
3176	East side Georgia Avenue, between Quackenbos and Tuckerman Streets.	584.20	1,210.70		24.14		2,628.08
3182	East side Georgia Avenue, from Farragut to Washington Street.	474.40					582.00
3187	West side Fifteenth Street NW, between Columbia Road and Howard Street.	130.22					189.63
3213	East side Seventh Street NW, north from Dalia Street, square 3174.	239.26					347.01
3276	North side H Street NW, between Mount Pleasant Street and Adams Mill Road.	1,597.81					1,969.74
3305	Both sides Fuller Street NW, from Seventeenth Street to Avenue of the Presidents.	3.00					874.00
3310	South side R Street NW, from Twenty-ninth Street to alley.	104.20					101.48
3323	North side Morania Road, between Nineteenth and Twentieth Streets.	147.73			221.60		212.61
3326	North side Columbia Road NW, from Eleventh Street westward.	131.26			202.30		185.93
3328	West side Kansas Avenue, between Randolph and Shepherd Streets.	4103.80					127.25
3329	North side Shepherd Street NW, from Georgia Avenue to Fourteenth Street.	1,066.85					1,307.83
3330	East side Sherman Avenue NW, Barry Place to Euclid Street.	482.88					669.86
3369	West side Harvard Street from Avenue of the Presidents to Columbia Road, and south side Columbia Road, from Harvard Street to Mozart Place.	277.89					270.60
3370	East side Fifteenth Street NW, from Webster to Allison Streets, and Allison Street from Fifteenth Street to alley, square 2700.	309.31					379.18
3371	West side Mount Pleasant Street, from Hobart Place to Harvard Street.	80.72					78.67
3141	West side Fourteenth Street NE, from East Capitol Street to alley.	135.13					133.17
3228	N Street NW, between Tenth and Eleventh Streets.		458.41				604.55
3231	West side Eighteenth Street NW, between F and G Streets.		297.13		158.00		390.46
3303	Alley, square 237.						301.46
3338	Both sides Eighteenth Street NW, from E to F Streets.		846.77				1,116.02
3339	South side H Street NW, from Twentieth to Twenty-second Streets, and north side H Street NW, from Twenty-first to Twenty-second Streets.						2,194.71
3341	South side H Street NW, from Eighteenth to Nineteenth Streets.		417.05				547.42

TABLE L.—Side-walks and curbs, 1914.

Job No.	Location.	Cement sidewalk.	Brick sidewalk.	Curb reset.	Curb set.		Old curb set.	Cost.
					6 by 20 inches.	8 by 8 inches.		
		Sq. yds.	Sq. yds.	Lin. feet.	Lin. feet.	Lin. feet.	Lin. feet.	
2500	Blow School, Nineteenth Street and Benning's Road.	125.66			60.00			\$600.94
2501	Wheatley School, N Street side, Twelfth and N Streets N E.	125.00					288.00	251.25
2502	Cranch School, Twelfth and G Streets S E.	356.99	99	90				355.11
2503	West School (front of).	106.47						124.30
2504	Tyler School, Eleventh Street S E., between G and I Streets.	240.91		49				243.95
2507	Mary School, B Street front and Twelfth Street.	368.79			194.90			508.11
2508	Central High School, O Street N W., between Sixth and Seventh Streets.					389.75		430.86
2510	Reservation 24, K Street N E., between Fifth and Sixth Streets.	113.17		169				153.07
2511	Hayes School, K Street N E., between Fifth and Sixth Streets.	165.19						153.21
2512	Reservation 20, North Carolina Avenue and Seventh Street sides.	450.59		28	522.02			258.53
2513	Reservation 125, Eighth Street front, between K Street and Virginia Avenue S E.	200.79	204					42.23
2515	Reservation 125, Eighth Street front, between K Street and Virginia Avenue S E.	45.53						296.32
2517	School on Trumbull Street, from Sixth Street to alley.	123.00		20	121.01			619.56
2520	Warder Street side, school site, square 30.33.	133.44			326.84			726.44
2525	Round Abbott School.	769.75						95.93
2526	Reservation 143, New Hampshire Avenue, Eighteenth and I Streets.	60.00				59.53		73.27
2528	West side New Hampshire Avenue, abutting Reservation 139, at Twenty-second Street.	171.62					563.10	169.93
2518	Reservation 302, Twenty-fourth and S, and Massachusetts Avenue.	465.84						124.83
2521	K Street side of Western Market.	109.00						287.97
2524	Thirteenth street side of Reservation 267.	328.17						307.83
2528	I Street side, Reservation 29, Twentieth Street to Pennsylvania Avenue.					326.16		1,688.83
2530	Anacostia Pumping Station, Eighteenth and Minnesota Avenue S E.	331.89					238.70	1,492.00
2531	Grover Cleveland School, Eighth street N W., between S and T Streets.	1,573.18						37.56
2539	Ground Old Post Office Building.	1,608.02						77.00
2540	Patent Office, Seventh, F, and G Streets N W.	45.00						288.78
2543	Reservation 177, New York Avenue, Fifth and L Streets.		309					
2547	Twenty-first Street N W., between K and L Streets.							
2547	K Street N W., between Twentieth and Twenty-first Streets.		60					
2547	West side Four-and-a-half Street, between A and N Streets.	281.72					100.00	
2548	Total.	8,611.72	1,008	500	1,225.37	775.44	1,183.80	11,509.66

TABLE M.—Miscellaneous work, 1914.

Job No.	Location.	Appropriation.	Grading.	Cement sidewalk.	Curb reset.	Curb set.		Brick sidewalk relaid.	Granite block relaid.	Vitrified block relaid.	Asphalt block laid.	Asphalt block relaid.	Description of work.	Cost.
						6 by 20 inches.	8 by 8 inches.							
6010	D Street NE., between New Jersey Avenue and Delaware Avenue.	Elimination of grade crossings.	Cu. yds.	Sq. yds.	Lin. ft.			Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.			\$791.07
6011	Q Street Bridge.	Q Street Bridge.											Clearing right of way.	25.50
6013	South side Massachusetts Avenue NE., between North Capitol Street and Plaza.	Elimination of grade crossings.												1,824.28
6016	North Carolina Avenue, between Sixth and Seventh Streets.	Buildings fire department, District of Columbia.			65									333.76
6018	1311 Q Street NW.	Parking commission.		5										7.23
6020	1403 Twelfth Street NW.	do.		5										7.23
6021	Anacostia Bridge.	Maintenance of Anacostia Bridge.											Laid 6,732 square feet flooring.	844.65
6025	E Street NE., between First and Second Streets.	Elimination of grade crossings.											Repair cribbing.	9.75
6027	Massachusetts Avenue NW., west of North Capitol Street.	Water department, high service.		27									Laid 68 linear feet coping.	40.55
6010	C Street NE., from First to Fourth Streets.	C Street NE., First to Fourth Streets.										210	Bituminous coat.	66.75
6021	Twenty-third Street NW; Kalorama Road to S Street.	Twenty-third Street, Kalorama Road to S Street.											Bituminous coat.	441.45
6041	Chesapeake Street NW, Wisconsin Avenue to Reservoir.	Chesapeake Street NW, Wisconsin Avenue to River Road.											Spread and roll macadam.	1,997.56
6070	Connecticut Avenue NW, Newark to Tilden Streets.	Connecticut Avenue NW, Newark to Tilden Streets.											Regulate and prepare subgrade.	3,181.01
5121	Fuller Street NW, Sixteenth to Seventeenth Streets.	Fuller Street NW, Sixteenth to Seventeenth Streets.	150										Bituminous coat.	238.63
5181	Macomb Street NW, Thirty-third to Thirty-sixth Streets.	Macomb Street NW, Thirty-third to Thirty-sixth Streets.											Spread and roll stone.	4,547.41

TABLE M.—Miscellaneous work, 1914—Continued.

Job No.	Location.	Appropriation.	Grading.	Content side-walk.	Curb reset.	Curb set.		Brick side-walk relaid.	Granite block relaid.	Vitrified block relaid.	Asphalt block laid.	Asphalt block relaid.	Description of work.	Cost.
			<i>Cu. yds.</i>	<i>Sq. yds.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Lin. ft.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>		
5191	Macomb Street NW., Connecticut Avenue to Ross Road.	Macomb Street NW., Connecticut Avenue to Ross Road.											Spread and roll stone.	\$2,731.49
5211	Ontario Road NW., Columbia Road south of Euclid Street.	Ontario Road NW., Columbia Road south of Euclid Street.											Bituminous coat.	240.84
5231	Rhode Island Avenue NE., Lincoln Road to North Capitol Street.	Rhode Island Avenue NE., Lincoln Road to North Capitol Street.											Grade and shape roadway.	161.13
5251	Seventeenth Street NW., Euclid Street to Columbia Road.	Seventeenth Street NW., Euclid Street to Columbia Road.											Bituminous coat.	199.11
5311	V Street NW., Flagler Place to Eleventh Street.	V Street NW., Flagler Place to Eleventh Street.										245		53.87
5001	C Street NW., between Seventeenth and Eighteenth Streets.	C Street NW., between Seventeenth and Eighteenth Streets.											Regulating.	432.75
5002	North Side C Street NW., between Seventeenth and Eighteenth Streets.	North Side C Street NW., between Seventeenth and Eighteenth Streets.				430.42								543.23
5112	2205 Franklin Street NE.	Franklin Street NE., Twenty-second Street eastward.											Repairing water service.	10.00
5161	Kalmia Street NW., to Rock Creek Park.	Grade and improve Kalmia Street.											Subgrade and spreading stone.	4,541.02
5162	do.	do.											Rolling.	142.37
5273	Rosedale Street NE., between Sixteenth and Seventeenth Streets.	Grade and improve Rosedale Street NE.				709.36								920.87
5301	U Street NE., North Capitol to Lincoln Road.	Pave U Street NE.				84.40								104.66
1402	Wisconsin Avenue NW., between R and Thirty-fourth Streets.	Georgetown schedule.											Removing old curb, etc.	294.69
1403	do.	do.	1,250											550.25
1503	W Street NW., between Fifteenth and Sixteenth Streets.	Northwest schedule.	175					375						215.75

1504	V Street NW, between New Hampshire Avenue and Seventeenth Street.	9			157	38		65.62
1505	Eighteenth Street NW, between C Street and Virginia Avenue.			280.97				383.64
1507	Both sides of V Street NW, Vermont Avenue to Tenth Street.			581.04				755.57
1601	I Street SW., Sixth to Seventh Streets.				75	10		270.50
1703	East side Eighth Street NE., between K and L Streets.			388.10				488.93
1704	Both sides K Street NE., between Fifth and Seventh Streets.			1,674.50				2,045.47
1804	South Carolina Avenue SE., between Twelfth and Thirteenth Street.						Preparing subgrade...	1,174.69
1805	Both sides of South Carolina Avenue SE., between Twelfth and Thirteenth Streets.			564.04				687.71
1404	Wisconsin Avenue NW, between R and Thirtieth Streets.	759						335.49
5031	Adams Street NW, North Capitol to First Street.						Spread and roll macadam.	2,028.39
5091	Eleventh Street NW, Clifton to Columbia Road.						Laid 320 feet terra-cotta drain tile.	156.33
5092	do.	524				62	Relay gutter crossings.	1,957.96
5151	Illinois Avenue and Kennedy Street NW.							9.75
5271	Sixteenth and Rosedale Streets NE.	530					Preparing subgrade and spreading stone.	2,840.59
5291	Thirteenth Street NE., Rhode Island Avenue to Franklin Street.							744.13
5081	Eighth Street NW, Jefferson to Longfellow Streets						Spread and roll stone.	1,482.60
5111	Franklin Street NE., Twenty-second Street eastward.						Grade and spread stone	1,934.40
5141	Hamlin Street NE., Twelfth to Thirteenth Streets	100					Grading and regulating.	571.45

TABLE M.—Miscellaneous work, 1914—Continued.

Job No.	Location.	Appropriation.	Grading.	Cement side-walk.	Curb reset.	Curb set.		Brick side-walk relaid.	Granite blocks relaid.	Vitrified block relaid.	Asphalt block laid.	Asphalt block relaid.	Description of work.	Cost.
						6 by 20 inches.	8 by 8 inches.							
5201	Nineteenth Street, NW., Park Road to Newton Street.	Grade and improve Nineteenth Street NW.	Cu. yds.	Sq. yds.	Lin. ft.	Lin. ft.	Lin. ft.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Spread and roll stone.	\$1, 129.08
5241	Rhode Island Avenue NE., Lincoln Road to Fourth Street.	Improve Rhode Island Avenue NE.											Grading.	586.42
6006	Various Streets.	Parking commission												466.50
6020	1413 Twelfth Street NW.	do.												7.59
6028	Quarry Road at Eight- eenth Street.	Quarry Road entrance to Zoological Park.											Erecting steps.	827.87
6029	Lanier Place.	do.			900								do.	1, 362.22
6030	Massachusetts Avenue be- tween North Capitol Street and Plaza.	Elimination of grade crossing.						3, 676					Filling and setting 14 manhole covers; 20 cubic yards concrete in trenches; gravel- ing 2,000 square yards.	519.94
6034	Central Islands, Union Station Plaza.	Improvement of Plaza.	3, 000											6, 688.72
Total.			6, 517	37	965	783.82	3, 929.07	4, 283	100	110	1, 471.7	755		55, 159.37

TABLE N.—Whole-cost work, 1914.

Job No.	Location.	For whom done.	Grading.	Cement walk.	Curb reset.	Curb set, 8 by 8 inches.	Vitrified block.	Asphalt block.	Terra-cotta pipe.	Description o work.	Cost.
6001	Rear of 1632-1634 Newton Street NW.	Thos. Somerville.	Cu. yds. 2.50	Sq. yds. 5.00	Lin. ft. 6.00	Lin. ft. 25.00	Sq. yds.	Sq. yds.	Lin. ft.	Lowering curb.	\$7.43
6002	Avenue of Presidents and New Hampshire Avenue.	Metropolitan Coach Co.								Changing curb at intersection.	120.98
6005	631 I Street NW.	L. Kolpinski.		1.50				3			2.00
6008	419 Eighth Street NW.	J. T. Kenyon.				60					9.04
6009	O Street entrance, Georgetown University.	V. L. Golden.									92.65
6022	2302 S Street NW.	W. P. Lipscomb Co.			59.50						23.22
6003	Eleventh Street NW., between Euclid and Fairmont Street.	Deposit Washington Railway & Electric Co.								Repairing within 2-foot space.	54.70
6019	Front 2310 S Street NW.	Deposit S. N. Myers.					22				54.57
6014	Thirteenth Street NE., between Rhode Island Avenue and Franklin Street.	Deposit D. C. Whitaker.							114		56.14
6036	Rear, 1744 R Street NW.	Clarke Waggaman.	6.00					23		Adjusting curb line.	18.63
6026	Adjacent to tracks, Thirty-sixth and M Streets NW.	Washington Railway & Electric Co.		8.00							33.26
6031	New post-office building, First Street and Massachusetts Avenue.	Post Office Department.			354.37	231.23		77			565.09
6035	North side Massachusetts Avenue, between Massachusetts and Nebraska Streets.	Washington Railway & Electric Co.	200.00							Grading and widening roadway.	3,255.71
6037	First Street NE., between Massachusetts Avenue and G Street.	John Gill & Son.	130.00		230.00		1,480				2,097.89
	Total.....		338.50	14.50	650.17	316.23	1,502	103	114		6,391.31

TABLE O.—Number of square yards and cost charged for repairs to cuts in streets, avenues, and alleys during the fiscal year ended June 30, 1914.

Item No. 1 shows the number of square yards and cost charged for repairs to cuts made by various plumbers and corporations at flat rates.

Item No. 2 shows the number of square yards repaired and the cost thereof on "whole-cost" work to which 5 per cent is added for tools, clerk hire, etc., for the maintenance of the miscellaneous trust fund deposits (District of Columbia), operating account, streets, which fund is used to pay all accounts for labor, material, tools, etc., in this class of work.

Item No. 3 shows the number of square yards and cost charged for work done on account of the sewer department.

Item No. 4 shows the number of square yards and cost charged for work done on account of the water department.

Item No. 5 shows the number of square yards repaired and cost charged for work done on account of other appropriations of the District of Columbia; also the cost of work against retents and appropriations of the General Government.

	Square yards.	Cost (amount charged).
Item No. 1.—Plumbers and corporations' cuts at flat rate:		
Sheet asphalt.....	1,900.62	\$6,177.00
Granite block.....	913.90	1,370.85
Asphalt block.....	1,937.45	2,981.17
Vitrified block and brick.....	997.50	2,493.76
Cobble and rubble.....	831.22	498.73
Macadam.....	2,507.28	2,507.28
Granolithic walks.....	9,675.00	15,963.75
Brick sidewalk.....	15,840.00	792.00
Bricks furnished.....	5,900.00	59.00
Asphalt blocks furnished.....	3,694.00	277.06
Vitrified blocks furnished.....	1,294.00	258.89
Cuts repaired at actual cost, plus 5 per cent.....	(?)	400.12
Item No. 2.—Various corporations and individual depositors.....	34,652.97	33,779.61
Item No. 3.—Various appropriations of the sewer department.....	42,133.22	67,405.41
Item No. 4.—Various appropriations of the water department.....	4,381.41	8,880.03
Item No. 5.—Various appropriations other than the above, including repairs to roads, streets, electrical department, improvements and repairs, assessment and permit work, parking commission, etc.....	14,284.98	20,715.45
	3,537.65	9,788.46
Total number of charges made for repairing cuts of all kinds, 10,100.	95,900.23	140,568.96

¹ Feet, and not included in total number of square yards. ² Included in number of macadam cuts.

Total number of charges made for repairing cuts of all kinds, 10,100.

TABLE P.—Grading streets, alleys, and roads, 1914.

Job No.	Location.	Grading.	Cost.
		<i>Cu. yds.</i>	
1902	Intersection Thirty-sixth Street and Norton Place.....	840	\$139.25
1904	Shepherd Street NE., west of Twelfth Street, and Twelfth Street south of Shepherd.....	600	187.87
1906	Gresham Place NW., between Fifth Street and Georgia Avenue.....	2,246	981.63
1907	Sixth Street NW., between Newton and Otis Streets.....	2,023	1,073.87
1908	Park Place NW. between Newton and Otis Streets.....	640	256.00
1909	Park Place NW., between Kenyon and Lamont Streets.....	1,514	623.37
1910	Twenty-eighth Street SE., adjacent to No. 2 engine house.....	240	95.94
1911	Lawrence Street NE., 300 feet east of Eighteenth Street.....	440	130.25
1912	Woodridge Street NE.....	820	366.75
1913	Alley, square east 6001.....	130	80.00
1914	Tracy Place and Wyoming Avenue NW., west of Twenty-third Street.....	705	293.53
1915	Highland Place NW., between Thirty-third and Thirty-fourth Streets.....	580	289.25
1916	Adams Mill Road between Ontario Road and Summit Place.....	2,830	499.62
1917	East side Fourth Street NE., between M Street and Florida Avenue.....	93	57.38
1918	Square 701.....	300	37.75
1926	Connecticut Avenue NW., between Keokuk and Legation Streets.....	1,200	436.50
1929	Varnum Street NW., between Seventh and Eighth Streets.....	250	87.25
1930	Lawrence Street NE., west of Seventeenth Street.....	675	215.75
1931	North and south alley, square 4221.....	215	110.06
1937	Myrtle Avenue NE., between Central and South Dakota Avenues.....	900	386.50
1938	West sidewalk and parking space, Ashmead Place.....	152	48.50
1939	Nineteenth Street NW., between Biltmore and Belmont Streets.....	288	100.75
1942	Warder Street NW., 200 feet north of Newton Street.....	500	176.06
1943	Kenyon Street NW., between Warder Street and Park Place.....	333	100.44
1948	Alley, square 3934.....	78	65.25

TABLE P.—Grading streets, alleys, and roads, 1914—Continued.

Job No.	Location.	Grading.	Cost.
		<i>Cu. yds.</i>	
1922	A Street NE., between Sixteenth and Seventeenth Streets.....	2,100	\$978.25
1923	Congress Heights NE., 97 feet from curb.....	320	51.75
1927	Girard Street NE., between Twelfth and Thirteenth Streets.....	1,694	389.62
1934	Tracy Place west of Twenty-third Street.....	706	298.53
1949	West Virginia Avenue from Otis to Penn Streets.....	7,081	424.06
1950	T Street NE., between First and Second Streets.....	132	66.00
1951	West Virginia Avenue between Florida Avenue and Queen Street.....	2,250	653.98
1952	Foots Street east of Anacostia Road.....	150	59.86
1928	C Street SE., between Sixteenth and Seventeenth Streets.....	56	28.25
1956	Alley, square south of square 3088.....	30	15.25
1957	Thirty-fifth Place NW., between T and U Streets.....	572	161.12
1959	West alley, square 1045.....	80	25.50
1940	Willow Street NW., between Carroll and Aspen Streets.....	1,900	478.37
1954	Fifth Street NW., north of Allison Street.....	250	99.50
1925	Congress Heights.....	874	436.75
1944	Q and Twenty-second Streets SE.....	164	82.19
1946	Windom Place, east of Wisconsin Avenue.....	49	23.50
1966	W Street, between Shannon Place and Railroad Avenue.....	187	93.75
1962	Kennedy Street NW., near Fourteenth Street.....	140	34.50
1963	Park Place, east of Twenty-fifth Street.....	196	98.00
1960	Alley, square 2591.....	270	140.19
1961	Lawrence Street NE., between Fourteenth and Fifteenth Streets.....	783	391.49
1967	West side Forty-first Street, between Davenport and Ellicott Streets.....	130	65.00
1968	Alley, square north of square 1850.....	1,234	616.94
			12,606.87
1903	Various streets, cleaning mud from sidewalks.....		1,376.12
	Total.....		13,982.99

REPORT OF THE SUPERINTENDENT OF STREET CLEANING.

WASHINGTON, D. C., September 15, 1914.

SIR: I have the honor to submit the following report of the street-cleaning division of the engineer department of the District of Columbia for the fiscal year ending June 30, 1914.

CONTRACT WORK.

Throughout the year the following work has been done by contract under the direction of this division:

Garbage.—The collection and disposal of garbage daily, including Sundays, from such hotels, apartment houses, markets, and other like places within the city of Washington and such of its suburban sections as may be designated, from time to time, by the Commissioners of the District of Columbia.

The collection and disposal of garbage daily, excluding Sundays, from May 16 to October 15, both days inclusive, and three times a week from October 16 to May 15, both days inclusive, from all places not embraced in the preceding paragraph within the existing fire limits of the District of Columbia and certain of the more thickly populated sections on the outside of and adjacent to the fire limits.

The collection and disposal of garbage three times a week from May 16 to October 15, both days inclusive, and semiweekly from October 16 to May 15, both days inclusive, from all places not included in the preceding paragraphs in the city of Washington and its suburbs, as such suburbs may, from time to time, be designated by the Commissioners of the District of Columbia.

The collection of garbage is made in wagons carrying a covered iron box which is lifted from the wagons and loaded on cars at the transfer station. This box, containing the garbage, is then shipped by rail to the disposal plant owned by the contractor, located about 32 miles from Washington, and the garbage is there disposed of by the reduction process.

Ashes.—The collection and disposal of ashes within the existing fire limits of the District of Columbia and certain of the more thickly populated sections outside of and adjacent to the fire limits, weekly from April 16 to October 31, inclusive, and semiweekly from November 1 to April 15, inclusive, from private residences, boarding houses, lodging houses of not to exceed 25 rooms, and

apartment houses containing not to exceed four families, and other like places, as may be designated by the Commissioners of the District of Columbia.

The collection and disposal of ashes from all private residences and such other like places corresponding to those included in the preceding paragraph from the remainder of the city of Washington and its suburban sections, as said suburban sections may from time to time be designated by the Commissioners of the District of Columbia, weekly, throughout the entire year.

The collections are made in wagons with canvas covers and disposed of by filling low ground on the outskirts of the city.

Refuse.—The collection and disposal of miscellaneous refuse, in the city of Washington and its more densely populated suburbs, as such suburbs may from time to time be designated by the Commissioners of the District of Columbia, once a week from all private residences, boarding houses, and lodging houses with not to exceed 25 rooms, and apartment houses containing not to exceed four families, and other like places, as may be designated by the Commissioners of the District of Columbia, and from such public waste boxes as may be established by the street-cleaning division in the machine-swept section of the city and District.

The collections are made in wagons suitable for this purpose and what is not salable is disposed of at an incinerating plant owned by the contractor.

Dead animals.—The collection and disposal of dead animals daily, including Sundays, throughout the year, from every part of the District of Columbia upon notification to the contractor of the existence of said dead animals.

The collections are made in vehicles suitable for the purpose, and the disposal is accomplished by the reduction process, at a plant owned by the contractor, located about 4 miles from the city.

Night soil.—The collection and disposal of night soil from all privies, and from all streets, avenues, alleys, roads, and open lots in the District of Columbia upon receipt of notice from the superintendent of street cleaning.

The collections are made in air-tight receptacles designed for that purpose and transported therein on barges about 8 miles from the city and there used as fertilizer on a farm.

Ashes from public buildings.—The collection and disposal of ashes and refuse from buildings under the control of the Commissioners of the District of Columbia as such may accumulate.

This work is done by contract under the direction of this division, but paid for from the appropriation for the maintenance of each building in proportion to the quantity removed.

MUNICIPAL WORK.

Throughout the year the following work was done under the immediate direction of this division:

Machine cleaning.—The cleaning of all paved streets outside the hand-patrol area every day, every other day, or every third day, depending on the location and traffic carried. At the beginning of the year the territory under attention amounted to about 2,225,000 square yards. On April 16, 1914, continuing the general policy of the division, certain paved streets were taken from the machine-cleaning territory and added to the hand patrol, thereby decreasing the area cleaned to about 1,603,000 square yards. Prior to April 16, 1914, the force employed consisted of two gangs of 1 sprinkler, 3 machines, 4 carts, and from 4 to 6 broomers each, and one gang of 2 sprinklers, 6 machines, 7 carts, and 8 broomers. After this date, one of the 3-machine gangs was abolished.

Alley cleaning.—The cleaning of all paved alleys in the District of Columbia about once every week. Additional alleys have been paved and added to those previously cleaned, bringing the total area cleaned from 1,060,000 square yards on July 1, 1913, to 1,079,959 square yards on June 30, 1914. This work was done by two gangs, each consisting of a 1-horse sprinkler, a 1-horse machine broom, 3 to 4 carts, and 6 broomers, and one gang of a 1-horse sprinkler, 3 carts, and 4 broomers, this gang being used in alleys too narrow for machine brooms.

Suburban cleaning.—The cleaning of all macadam, gravel, and unpaved streets not taken care of by the county, and unpaved alleys in the more thickly populated suburban sections, about once every 10 days. Additional territory was transferred during the year from that taken care of by the division of county roads, increasing the total from 1,481,525 square yards to 1,514,180 square yards, the alleys under attention totaling an additional 55,200 square yards. Two

gangs were used for this work, each composed of 4 carts and from 8 to 10 broomers.

Hand patrol.—The daily cleaning of all streets in the central portions of the city, amounting to about 3,524,700 square yards. Due to additional streets being paved and changes made in the machine work, this is an increase of 711,700 square yards over the territory under attention July 1, 1913. Approximately 260 men are employed daily, divided into six gangs, and the dirt gathered by sixteen 2-horse wagons, an increase in the working force of 42 men and three 2-horse wagons over that employed at the beginning of the year.

Flushing.—The flushing of cobblestone, granite, asphalt block, and poorly paved streets in the hand-patrol section of the city, amounting to about 374,050 square yards, an increase of 64,050 square yards over the territory under attention July 1, 1913. A battery of three pneumatic flushing machines has covered this territory about once in four or five days, the hand patrol removing the dirt from the gutters.

Squeegeeing.—The squeegeeing of nearly all the smoothly paved streets in the hand-patrol area two to three times each week, amounting in street area to about 1,855,000 square yards. This is an increase of 114,000 square yards over the territory under attention a year ago.

From the middle of October to the middle of April two gangs, each composed of 1 sprinkler and 3 squeegee machines, were operated whenever the weather permitted, each street in the section being washed about every three days. During the remainder of the year one gang of 1 sprinkler and 4 machines worked double shift in addition to a day gang of 1 sprinkler and 3 machines, reducing the intervals between washings to about two days. As a result of this frequent washing there has been practically no complaint of dust, the white wings removing all coarser particles of dirt and the intervals between washings being too small to permit any accumulation of dust or the scum which makes the pavement so slippery when slightly wet.

Dust prevention.—The coating of practically all unpaved suburban streets with emulsion road oil, the entire area being covered about ten times. The first part of the season two spreader wagons and three supply wagons were used, but as the oil accumulated on the streets less oiling was necessary and the force was cut down to one spreader and two supply wagons, the intervals between oiling being lengthened.

GENERAL.

The division of street cleaning serves a population of about 353,297 and covers an area of approximately 70 square miles.

The acts of Congress making appropriations for the expenditures of the District of Columbia for the fiscal year ending June 30, 1914, allowed \$260,000 for dust prevention, cleaning streets and alleys, and snow removal. This was a reduction by \$5,000 from the amount received during the previous year and extensions of service were only made in the case of newly paved streets or alleys. It is very gratifying to note that in spite of this reduction the records of area cleaned show a considerable increase over the figures for the previous year.

The severe storm of July 30 caused a halt in the normal functions of the street cleaning division and the entire force was occupied for several days in clearing the streets of the debris from the storm, the men being equipped with axes, saws, etc., and the teams engaged in hauling tin roofs, limbs, and branches of trees, etc.

The continued marked superiority of the hand patrol work over machine-broom cleaning, led to a still further reduction in the area cleaned by the latter method. The change involved a complete reorganization of the white-wing sections and added 42 men and 3 wagons to the hand patrol force, this territory previously having been taken care of in two days by a 3-machine broom gang.

The two-sprinkler, six-machine broom gang with two foremen, one equipped with a motor cycle, continues to show an advantage over the one-sprinkler, three-machine gang with one foreman equipped with a horse and buggy. The motor-cycle foreman of the two-six gang spends his entire time with the broomers and carts and the cost of the force required to broom up and carry away the dirt swept to the gutter has been reduced 20 per cent.

The use of motor cycles shows to such a great advantage that the estimates for the fiscal year 1916 requests authority to purchase four additional motor cycles or light motor vehicles. The territory assigned to the white-wing foreman using motor cycles is so large that it would be impossible for them to cover every street in their territory every day with either bicycle or horse and buggy.

The policy of the division as regards snow and ice has undergone a considerable change during the past year. Previously, no snow was hauled except from street-railway intersections, largely at the expense of the railway companies, and the energies of the division were directed toward cleaning off sidewalks and crosswalks, opening up gutters, and scattering the snow so as to facilitate its melting and running off. During the past winter, however, the division was engaged actively in the hauling of snow; teams and men being hired and the work carried on day and night. It is estimated that during the winter approximately 160,000 cubic yards of snow were removed from the streets in the business section of the city, in addition to the opening of crosswalks, sidewalks, and gutters in the surrounding territory.

The cost-keeping system has been still further simplified and a description has been made of the entire work of the same. A chart has also been developed showing all the records received, their origin, and the intermediate steps to the final-cost report. This chart also shows the clerk responsible for the proper keeping of each record and, when used in connection with the description already referred to, assures the proper working of the cost system even though extensive changes in the operating force should occur. The continued efficiency of the cost-keeping system and particularly its relation to the foreman on the street is shown in their interest in the costs of the work of their gangs and also in the reduction in unit cost for the various classes of cleaning.

In the tables following the yardage of the hand patrol area cleaned shows a considerable increase over the figures for the previous year, partly due to the change from machine-broom sweeping to hand patrol, machine cleaning showing a reduction of about one-quarter of the total increase in the hand patrol work. In spite of this large increase, the total expenditure for hand patrol work is about \$1,000 less than during the previous year.

In the case of suburban cleaning, a considerable reduction is shown both in yardage cleaned and in total cost. This reduction is no doubt possible because of the frequent oiling which the suburban streets received. The tendency of the oil is to compact the surface and reduce the amount of material to be removed by the cleaners. During the past year the dirt removed by the suburban gang has been reduced almost 2,000 cubic yards as compared with the previous year.

The increased yardage for flushing, at practically the same total cost, is due to an improved method of working. A battery of three machines is now being used where formerly but two were operated in conjunction. It is found that in most streets with the three machines, the wave of water from the first machine is taken up by the second and carried to the curb by the third, a cleaner street being obtained by this method and less water used than is the case where the material comes to rest some distance from the curb and must be again set in motion. Washing with squeegee machines shows practically the same area at small increased unit cost, partly due to the cost of forage, but also to the fact that there were fewer days during the past year when squeegee machines could be operated as compared with the year previous.

The great difficulty with washing machines, both squeegees and flushers, is that during a considerable portion of the year they are useless, the pavements being so cold that any water deposited immediately freezes. This means that during such weather there are a large number of horses standing idle, but still costing practically as much for forage, maintenance, etc., as if working their regular quota. In the estimates for the coming year, therefore, an item has been included for the purchase and maintenance of two motor-propelled squeegees and one motor-propelled combination sprinkler and flusher. It is believed that by the use of these machines not only will it be possible to wash the streets more frequently but a reduced unit cost should be possible, particularly since during the cold season there will be no cost for maintenance as compared with the present live stock.

The inspectors of the collection and disposal of city wastes made investigations during the year of complaints and requests in number, as follows: Garbage, 929; ashes, 2,333; and refuse, 2,981. Of the total garbage complaints but 40, or 6 per cent, were found on investigation to be the fault of the contractor; 186, or 27

per cent, were found to be the result of violations on the part of the householders of the police regulations regarding the disposal of refuse while in 461 cases, or 67 per cent, the fault could not be definitely placed. In the case of ashes, 234, or 14 per cent, were found to be the fault of the contractor; 608, or 37 per cent, chargeable to the failure on the part of the householder to observe the regulations, principally regarding accessibility, while 827, or 49 per cent, are classed as doubtful. In the refuse service, 608 complaints, or 24 per cent, were found to be the fault of the contractor; 833, or 33 per cent, to be the fault of the householder; while 1,056, or 43 per cent, were classed as doubtful.

For the inspection of the disposal of city wastes, including garbage, ashes, refuse, dead animals, and night soil, there are only 5 inspectors. It is manifestly impossible for them to supervise the collection of every class of city waste at every house. Inspection can only be made in a general way—information obtained as to whether each wagon is on its regular route on the schedule day, special attention being given to those which are likely to be behind, and complaints investigated. The investigation being made after the cause of the complaint, it is usually difficult to ascertain whether the fault was the servant's or householder's. In not making the proper separation and the waste accessible to collectors, or that of the collector.

The contracts for the collection and disposal of night soil and for the collection and disposal of ashes and refuse from public buildings under the control of the commissioners expired June 30, 1913. New contracts were entered into to continue this work, that for night soil removal being for a five-year period, at \$15,000 per annum, while that for ashes and refuse from public buildings was for a one-year period, at 41 cents per cubic yard. This one-year period expired June 30, 1914, and the contract was extended for an additional year at the same price per cubic yard.

The contracts for the collection and disposal of garbage, ashes, refuse, and dead animals are all five-year contracts and expire June 30, 1915. With a view to obtaining less objectionable, more efficient, and more economical services than are at present rendered by the contractors, the commissioners have for three years past recommended to Congress that an appropriation be made for the purpose of investigating and reporting on the collection and disposal of city waste, including the preparation of plans and specifications for the construction of disposal plants.

It is estimated that the contractors for the disposal of city waste have invested in collecting equipment and disposal plants several hundred thousand dollars which they must have figured on recovering from the amounts received from the District of Columbia for the services rendered during the five-year term of their contracts, as these investments will be practically valueless on their expiration if they are not successful in obtaining the same contracts for the next term of five years. In other words, the District of Columbia is probably paying to the contractors, in addition to the cost of the work and the contractor's profit, the cost of complete disposal plants and collection equipment every five years, whereas the disposal plants, if owned by the District, would probably have a life of 40 or 50 years. It is believed that the District of Columbia should at least own the disposal plants, which could be operated by the district, and the collection of city wastes could be let to contractors; or the whole service could be let by contract on the basis of the contractors leasing the disposal plants from the District of Columbia.

Under the present system the collections of garbage, ashes, and dead animals are practically perfect. The collection of miscellaneous refuse was in a similar state until early this spring, when the contractor made a change in his collection routes, which resulted in very irregular service and numerous complaints. At the present time, however, this system is working very satisfactorily, and a very good service is being given.

Your attention is invited to the detailed information and statements of appropriations and expenditures submitted herewith.

Very respectfully,

J. W. PAXTON,
Superintendent of Street Cleaning.

Capt. MARK BROOKE,
*Corps of Engineers, United States Army,
Assistant to the Engineer Commissioner, District of Columbia.*

FINANCIAL STATEMENT, STREET CLEANING APPROPRIATIONS, FISCAL YEAR 1914.

"Streets, District of Columbia, 1914;
cleaning, etc.":

Pay rolls—

Hand cleaning-----	\$101,222.16
Machine cleaning-----	21,344.05
Alley cleaning-----	13,151.49
Suburban-street cleaning-----	10,124.18
Squeegee cleaning-----	4,792.65
Flushing-----	1,210.40
Sprinkling-----	583.82
Oiling-----	683.51
Dump men-----	2,945.54
Office work-----	1,173.98
Stables-----	13,702.56
Repair shop-----	15,025.54
Snow and ice-----	8,644.17

Operating expenses—

Office-----	94.42
Rent of storage rooms-----	490.75
Livery, inspectors' horses-----	1,082.00
Oil for roads-----	11,351.03
Hire of extra teams—	
Oiling-----	224.00
Snow and ice-----	1,982.30
Squeegees-----	16.00
Electric light and power-----	698.28
Repair material and supplies-----	13,759.10
Forage-----	32,730.82
Stable supplies-----	2,190.09
Equipment-----	1,769.05
Unexpended balance-----	94.80

Total----- \$261,086.69

Repaid from other appropriations—

"Contingent and miscellaneous expenses, District of Columbia, 1914, sweeping B Street"-----	480.00
"Improvements and repairs, Dis- trict of Columbia, 1914, re- pairs to streets"-----	97.12
From Washington Railway & Electric Co.—	
Snow and ice work-----	189.52
Oiling tracks-----	198.39
From Capital Traction Co., snow and ice work-----	121.66

Total amount repaid----- 1,086.69

Amount of appropriation----- \$260,000.00

"Streets, District of Columbia, 1914, disposal of city
refuse":

Garbage-----	68,384.00
Ashes-----	73,007.00
Refuse-----	16,583.50
Night soil-----	14,962.00
Dead animals-----	2,853.00
Livery, inspectors' horses-----	1,079.03
Office expenses-----	55.44
Inspection-----	2,627.00
Balance-----	394.03

Amount of appropriation----- 179,945.00

Removal of snow and ice:

Pay rolls-----	\$1,352.60	
Balance of appropriation by act of Congress, Feb. 9, 1907-----		\$1,852.80
"Contingent and miscellaneous expenses, District of Columbia, 1914, contingent expense, street cleaning allotment":		
Office expense-----	357.70	
New equipment-----	293.83	
Unexpended balance-----	48.47	
Amount of appropriation-----		700.00
"Salaries, offices, District of Columbia, 1914":		
Amount expended-----	41,129.98	
Unexpended balance-----	50.02	
Amount appropriated-----		41,180.00
Total amount of appropriations-----		483,177.60

Miscellaneous data, street-cleaning work.

Class of work.	Material removed.			
	Wagon loads.	Cart loads.	Cubic yards.	Tons.
Machines-----		13,006	26,012	13,006
Alleys-----		5,625	8,438	5,625
Suburban-----		8,454	8,454	8,454
Hand patrol-----	12,606		50,424	25,212

Class of work.	Average force per working day of 8 hours.								Days worked.	
	Carts.	Wagons.	Sprinklers.	Machines.	Squeegees.	Flushers.	Hired teams.	Men.	Calendar.	Actual.
Machines-----	15.8		3.8	11.7				49.4	260	256.9
Alleys-----	10.0		2.8	1.9				31.3	270	264.0
Suburban-----	8.1							26.1	257	248.7
Hand patrol-----		17.1						249.9	286	276.9
Flushing-----						3.1		3.1	239	228.2
Squeegee-----			2.7		9.0			12.4	248	235.1
Sprinkling-----			2.1					2.1	208	188.0
Oiling-----			3.7				0.057	4.3	106	98.7
Snow and ice-----							13.3	265.9	20	24.5

Table showing comparative data in connection with street-cleaning work from 1910 to 1914.

SQUARE YARDS CLEANED.

	1910	1911	1912	1913	1914
Hand patrol-----	543,088,777	536,897,423	646,377,000	766,918,000	835,588,000
Machine sweeping-----	435,397,855	367,242,484	337,990,000	286,067,000	267,557,000
Alley cleaning-----	50,532,192	38,396,138	54,664,000	61,354,000	58,671,000
Suburban streets-----	59,683,516	40,194,274	27,825,000	43,595,000	34,296,000
Squeegees-----		50,012,859	68,328,000	144,629,000	144,878,000
Flushing-----		5,589,367	8,747,000	20,703,000	22,424,000

DIRECT TOTAL COST.

Hand patrol-----	\$96,610.13	\$94,134.48	\$98,132.85	\$117,980.15	\$116,921.65
Machine sweeping-----	99,053.02	83,547.67	54,623.72	46,088.96	41,756.07
Alley cleaning-----	20,212.85	15,358.44	17,752.45	19,908.48	19,795.31
Suburban streets-----	17,437.01	17,006.26	14,559.76	18,552.80	13,591.99
Squeegee-----		5,814.57	9,407.58	17,026.64	17,478.55
Flushing-----		1,765.12	2,385.84	5,143.78	5,210.98

Table showing comparative data in connection with street-cleaning work from 1910 to 1914—Continued.

COST PER 1 000 SQUARE YARDS.

	1910	1911	1912	1913	1914
Hand patrol.....	\$0.1778	\$0.1753	\$0.152	\$0.154	\$0.140
Machine sweeping.....	.2275	.2275	.162	.161	.156
Alley cleaning.....	.40	.40	.324	.325	.337
Squeegs.....		.1162	.096	.117	.121
Flushing.....		.3157	.272	.248	.232

NOTES.—Changes and improvements in methods of measuring and distribution prevent exact comparison between the figures for different years.

Previous to 1912 the work of machine sweeping, alley cleaning, and suburban street cleaning was done by contract.

Table showing comparative data in connection with disposal of all city wastes from 1910 to 1914.

NUMBER OF UNITS COLLECTED.

	1910	1911	1912	1913	1914
Garbage.....tons..	44,236	48,214	47,445	50,778	48,927
Ashes.....cubic yards..	162,272	171,361	203,598	200,430	255,358
Miscellaneous refuse.....do..	72,060	108,789	115,378	138,382	140,683
Night soil.....barrels..	26,280	23,834	21,263	19,845	15,514
Dead animals.....number..	18,875	16,720	17,492	21,287	19,148

TOTAL NET COST

Garbage.....	\$78,396.00	\$68,400.00	\$68,384.00	\$68,388.00	\$68,384.00
Ashes.....	65,852.40	73,111.00	73,033.00	73,129.00	73,007.00
Miscellaneous refuse.....	15,654.00	14,934.00	16,560.00	16,593.00	16,583.50
Night soil.....	15,984.00	16,272.00	16,600.00	16,600.00	14,962.00
Dead animals.....	2,360.80	2,855.00	2,855.00	2,855.00	2,853.00

COST PER UNIT.

Garbage.....ton..	\$1.77	\$1.41	\$1.44	\$1.34	\$1.39
Ashes.....cubic yard..	.40	.42	.36	.36	.29
Miscellaneous refuse.....do..	.21	.14	.14	.12	.12
Night soil.....barrel..	.60	.68	.78	.83	.96
Dead animals.....number..	.126	.170	.163	.134	.149

FINES DEDUCTED.

Garbage.....	\$1.00		\$16.00	\$12.00	\$16.00
Ashes.....	192.00	\$39.00	97.00	21.00	143.00
Miscellaneous refuse.....	346.00	2,066.00	440.00	407.00	416.50
Night soil.....	516.00	328.00			38.00
Dead animals.....					2.00

Specifications for the collection and disposal of ashes, garbage, dead animals, and miscellaneous refuse in the District of Columbia.

[Work done under supervision of street-cleaning division.]

1. *Definitions.*—The term “garbage” wherever it occurs in these specifications means all refuse of animal and vegetable matter which has been used as food for man (except oyster and clam shells from business places) and all refuse animal and vegetable matter which was intended to be so used, and includes food condemned by the health department. The term “dead animals” means all dead animals, or parts thereof, not intended to be used as food for man. The term “miscellaneous refuse” means all refuse from places of residence and business, except garbage, dead animals, night soil, and ashes. In

addition to the ordinary household rubbish it will be held to include discarded Christmas trees and greens and small branches from shrubs or vines, but will not include any material whatever in the nature of earth or sand, wall paper, lumber, brick, stone, plaster, or other substance that may accumulate as the result of building operations or repairs to yards and buildings. Manure is not included under any of the above classes of material. The term "ashes" will be held to mean ashes from coal and other fuel, and will include such mineral substances as fallen plastering, etc., as may accumulate in connection with the ordinary conduct of dwellings and places of business, but not such as may accumulate as the result of building operations.

2. *Hours of collection.*—Garbage, miscellaneous refuse, and ashes must be collected between 7 o'clock a. m. and 6 o'clock p. m.; dead animals must be collected between 6 o'clock a. m. and 9 o'clock p. m. Special collections at other hours may be authorized by the commissioners, and may be required by them whenever in their judgment they are necessary.

3. *Receptacles.*—Garbage intended for collection will be deposited by householders in water-tight covered vessels which can easily be handled by one man; ashes and miscellaneous refuse intended for collection will be deposited by householders in receptacles suitable for that purpose and which can easily be handled by one man. All receptacles aforesaid will be placed at points accessible to collectors. In the case of hotels, apartment houses, markets, etc., larger receptacles will be allowed under such restrictions as the commissioners may determine. In the event of dispute between citizen and contractor as to the point at which the garbage, ashes, or miscellaneous refuse shall be placed for collection the case shall be referred to the superintendent of street cleaning, whose decision shall be binding upon the contractor.

4. *Defining accessibility—Provisions for failure to remove.*—The term "accessible to collectors" in the foregoing paragraph (No. 3) of these specifications shall be held to mean the placing of the receptacles by the householder inside of and near to the side or rear entrance of the premises (if collections are made from the side or rear) and in the areaway or other convenient place in front of said premises (if collections are made from the front), and the unfastening of the gate or other approach to the premises upon due warning by the collector by the free use of his horn, gong, or other signal. No receptacle will be allowed on the sidewalk, street, or public alley, and if the house or building has no yard or areaway large enough to hold the receptacles containing what accumulation is made between the regular collection days without unduly blocking the free passage through such areaway, collection must be made from within said house or building, provided entrance be afforded by a previously unlocked gate, door, or window. Nothing in these specifications shall be held to compel the contractor on his regular collection day to stop at any premises where the gate or other entrance thereto is found locked at the time of his arrival, nor to wait for said entrance to be opened, nor to notify the householders of his presence by any other means than the free use of his horn, gong, or other signal: *Provided, however,* That where, through failure by any cause of his own, the contractor does not remove ashes, garbage, or miscellaneous refuse on his regular collection day, such material must be collected the next succeeding day, if so desired, by the householder, from each and all of the premises neglected, whether the said material is made accessible or not in the meaning previously defined in this paragraph.

The fact that the contractor so removes the neglected material the day following the regular time of collection shall not be held to release him from liability for liquidated damages incurred by such neglect, except where the streets on the regular collection day are, in the opinion of the superintendent of street cleaning, in such condition as to excuse such neglect.

5. *Removal from street, etc.*—Each contractor for the removal of any class of material named in paragraph 1 of these specifications, which is ordinarily kept in receptacles on the premises of the householder, must under such exceptional circumstances as in the opinion of the superintendent of street cleaning render it necessary, and upon his order, remove such material from any public street, avenue, alley, or road, or from any vacant lot, park, or uninclosed land.

6. *Mixed material.*—The commissioners will enforce the separation by householders of each class of material named in paragraph 1 of these specifications, so far as may be practicable. But whenever, through neglect on the part of a householder or otherwise, two or more classes of such materials have been deposited in the same receptacle or place, the collection contractor affected, when such mixed material is refused by his collector, must notify the house-

holder on whose premises the mixed material is found and request said householder to have such material separated in accordance with the police regulations of the District of Columbia; in the event of the householder refusing so to do, the contractor must forthwith, in writing, notify the superintendent of street cleaning, giving the name and address of the householder. Whenever in his opinion it becomes necessary said superintendent shall determine by which contractor or contractors, if any, the material in question shall be collected and disposed of, and such contractor or contractors must collect and dispose of such material.

7. *Unlawful receptacles—Frozen material.*—Lawful receptacles for ashes, garbage, and miscellaneous refuse will be found defined as to size and nature in the police regulations of the District of Columbia. No person shall deposit ashes for collection in any receptacle having a capacity of less than 5 nor more than 24 gallons. If material is found in unlawful receptacles the collector may refuse to collect the same, unless the use of such unlawful receptacles has been necessitated by the collection contractor's neglect (see par. 8) or authorized by the superintendent of street cleaning, but if such material is refused, the householder must be notified and the reason for such refusal must be explained to him by the contractor. If, upon the next regular collection day, lawful receptacles have not been provided, the contractor for collection must notify the superintendent of street cleaning forthwith, in writing, giving the name and address of the householder at fault.

The said police regulations instruct householders to keep garbage free from dishwater and as dry as practicable, to have both ash and garbage receptacles covered when awaiting collections so as to prevent animals from getting at their contents, to keep out rain, and to obviate freezing as far as possible. When garbage or ashes are found in frozen condition, the collector for such class of material shall not refuse to collect same without notification to the householder, and if said householder is willing that the collector shall attempt to loosen such frozen material and releases the collector from any unavoidable damage done to the receptacle in such attempt, said collector must remove such frozen material. Where the householder is not willing to release the collector from unavoidable damage in loosening the contents of the receptacle, and the material is refused, the contractor for the collection of such material must notify the superintendent of street cleaning of such refusal forthwith, in writing, giving the name and address of the householder on whose premises the frozen material is found; provided, however, that nothing in this or the preceding paragraph shall be held to release the contractor or contractors for collection from liability for liquidated damages incurred by neglect where material has been refused from any cause whatever (except inaccessibility), unless such refusal is reported in writing forthwith to the superintendent of street cleaning, as herein provided for.

8. *Accumulation.*—Householders are required to provide sufficient receptacles for each class of material to contain all of such material accumulating on the premises between the regular collection days. The contractor shall, on demand of the householder or the superintendent of street cleaning, collect all of such material, whether the same be in lawful receptacles or not, whenever an accumulation results through his neglect, but he shall not be required to collect such material as may not be in lawful receptacles and due to the neglect of the householder.

9. *Receptacles, and damage to same.*—The contractor for the collection of garbage must provide each of his collectors with a water-tight bucket, said bucket to be used wherever possible in the transfer of garbage from the householder's receptacles to the contractor's collection vehicle.

All receptacles, whether for ashes, garbage, or miscellaneous refuse, shall be replaced in the position where found by the collector, shall be handled carefully, and if damaged by the carelessness of the collector such damage shall be made good by the contractor for collection.

10. *Obstruction of streets, etc.*—If any street, avenue, alley, or road be obstructed so that vehicles used for the collection of any material mentioned in paragraph 1 of these specifications can not pass into, over, or through the same, the contractor for the collection of such material must cause it to be removed to collection vehicles on the streets, avenues, alleys, or roads which are not obstructed.

11. *Warning signal—Manner of collection.*—The contractor for the collection of any material described in paragraph 1 of these specifications must see that each collector employed by him gives, in such manner as may be directed by

the superintendent of street cleaning, timely notice to the householder of his approach so that the material may be collected without undue delay. The contractor must see that no collector employed by him picks or sorts over material collected, and that it is transferred from the receptacles of householders to the vehicles used for collection without unnecessary delay or exposure and without spilling. The contractor must see that each collector employed by him who opens a gate, door, or window leading to any premises properly closes the same before departing.

12. *Notices of collection days, etc.*—The contractor for the collection of garbage or miscellaneous refuse and of ashes shall, at his own expense, issue cards, approved by the superintendent of street cleaning, stating the days for collecting such material in particular streets and districts, and designating as nearly as may be between what hours the collector will call in each locality; shall, before beginning work, cause one or more copies of such cards to be left at every building from which such material is to be collected; and whenever it is proposed to make any changes in the days or hours of collection, and prior to making such change, shall cause one or more copies of cards showing proposed time of collection to be left at each building affected by it.

The information as to collection days and hours required on the above cards must be supplemented by such quotations from the police regulations concerning the size and nature of receptacles, their accessibility, and the character of the separation of the various classes of material called for by such regulations as may be ordered in writing by the superintendent of street cleaning, and such other information as may be desired by the contractor and approved by the superintendent.

Where collections are made semiweekly, at least two days must elapse between collections; where made three times a week, at least one day must elapse between collections.

13. *Collection districts and map.*—The contractor for the collection of any material mentioned in paragraph 1 of these specifications shall, before commencing work, and thereafter at least two weeks before each change, if there be any, from summer to winter service, and vice versa, subdivide the entire area from which collections are to be made into collection districts of such size as, for the purposes of his contract, can be readily served under ordinary circumstances by one vehicle; shall assign to each collection district a number; shall furnish the superintendent of street cleaning with a map showing the boundaries of each district, the number assigned to it, and the collection days in it; and shall forthwith notify said superintendent in writing of any change in boundaries and numbers of such collection districts which may be made after such map has been furnished and incorporate such changes on said map.

If said map is not furnished nor said notification given as herein provided, the superintendent of street cleaning shall withhold his certificate from the regular semimonthly pay voucher until such map or written notice is received by him.

14. *Ownership of material.*—If a single contract be awarded for the collection and disposal of any material, all such material collected will be the property of the contractor from the time of its collection. If, however, separate contracts be awarded for the collection and for the disposal of any material the contractor for collection will have no ownership in the material collected except as may be necessary to enable him to transfer the same, but must deliver all such material, without alteration or diminution, except such as may result from the use of disinfectants and deodorizers, to the contractor for disposal. Such material will be the property of the contractor for the disposal thereof after it has been delivered to him by the contractor for collection.

15. *Separate contracts for the collection and disposal and the transfer points.*—If separate contracts be awarded for the collection and for the disposal of any material, and it is desired by the latter contractor to dispose of any such material at some place not in or within convenient hauling distance from the city of Washington, and the commissioners consent thereto, the latter contractor must establish and maintain in or within convenient hauling distance from said city such station or stations as in the opinion of the commissioners may be necessary for the reception and transfer of the material collected or delivered there, which latter stations must not be located at any place nor reduced in number nor changed in location without the consent of the commissioners.

16. *Incombustible residue—presenting mixed material.*—Where a contract is let for the disposal of any material or materials by burning, the driver for the

District or for the collection contractor or any other person delivering such material or materials must not be kept waiting to empty, or after emptying his vehicle, or for any purpose whatever. If the material so presented is in its nature incombustible, or if it leaves an incombustible residue after burning, such material or residue must be disposed of by the contractor for disposal in a manner satisfactory to the commissioners.

If, however, material presented to any contractor for disposal is found to be mixed with any other class of material to the extent of 5 per cent or more it may be refused by said contractor, if authorized so to do by the representative of the street-cleaning department stationed at the place of reception, and the person delivering it may be required to separate said mixed material properly or to remove it forthwith upon failure to do so.

17. *Dumps for ashes.*—If a contract be made for the collection of ashes and authorizing their disposal on such public dumps as may be controlled from time to time by the commissioners, the contractor for such collection and disposal shall provide his own safeguards at such dumping places and shall take such precautions as may be necessary to prevent accident. The commissioners will assume no liability for accidents resulting through the contractor's use of said dumping places. The superintendent of street cleaning shall station at such places a representative who shall have general supervision and control over the points at which dumping must be done, the time of opening and closing said dump, the prevention of all fires on the dump, the trimming and handling of all material, the persons permitted on the dump, and shall determine the character of such material as is presented for disposal. Only clean ashes will be accepted at such dumps, and the representative of the superintendent of street cleaning shall be empowered to refuse all ashes mixed with other materials brought to the dump and to require such mixed material to be separated or to order it removed forthwith. The contractor shall be bound to conduct the dumping in accordance with the directions of the superintendent of street cleaning and the contractor must comply with such directions.

18. *Time of disposal.*—Garbage, dead animals, miscellaneous refuse, and ashes must be within the digesting tanks or within the furnace or otherwise in process of actual disposal not later than 7 o'clock a. m. on the day following its delivery at the place of disposal. Such garbage and dead animals must be completely disposed of within 24 hours and all miscellaneous refuse and ashes within 72 hours after such delivery. The capacity of any plant or method established by any contractor must be sufficient to enable necessary repairs to be made without interfering with the work of disposal.

19. *Transportation.*—Arrangements for transportation and the method of disposal must be such that regular daily disposal will not be interrupted by reason of (1) the obstruction of the Potomac River by ice or otherwise, (2) the effect of bad weather on roads, (3) inadequate railway facilities.

20. *Lost articles.*—Articles of special value found in the material or on the dead animals collected must be kept by the contractor for the disposal of such material or dead animal in his office for a period of one year after the finding thereof.

As soon as possible after the finding thereof the contractor must cause each such article to be properly marked so as to show the date of finding and as nearly as may be possible the place where found. A list of such articles shall be forwarded daily to the superintendent of street cleaning, describing each article found since the preceding report, and showing the collection district from which it came, the name of the finder, and such other information as may be of assistance in discovering the owner.

21. *Plant.*—Each contractor must establish and maintain without cost to the District of Columbia beyond the price stated in his proposal or proposals all such wharves, boats, cars, vehicles, buildings, furnaces, boilers, driers, presses, and other devices and apparatus as may be necessary to enable him to perform the work specified in his contract or contracts.

22. *Covered conveyances.*—Material collected under these specifications must be transported by the contractor or contractors within the District of Columbia in covered conveyances satisfactory to the commissioners.

23. *Collection vehicles.*—Vehicles used by the contractor for the collection of any class of material other than dead animals described in paragraph 1 of these specifications must be uniform and have capacities in exact multiples of 1 yard, except as otherwise authorized in writing by the commissioners. Such vehicles must be so constructed as to be loaded and unloaded and to carry their contents without offense to the public. They must be strongly built, must

be plainly numbered on both sides and marked with the name and address of the collection contractor, and must be kept in good repair, well painted, thoroughly cleaned, and free from odor at all times.

24. *Care and use of garbage receptacles, vehicles, etc.*—Every receptacle used by the contractor for the collection of garbage, whether tank, can, barrel, or the body of a cart or wagon, must be metal, water-tight, strongly built, provided with a close-fitting metal or other tight-fitting cover satisfactory to the commissioners, and have a capacity of not less than 30 gallons. The cover, if made of metal, must be equipped with rubber or other pads to effectually prevent rattling and, together with the body of the receptacle, must be thoroughly washed inside and out once each 24 hours; if furnished by the contractor for disposal, this washing must be performed by said contractor.

Every vehicle used for the collection of miscellaneous refuse and for the collection of ashes must be so constructed as to prevent the escape of its contents during the process of transportation and must be covered with canvas or other cover. When in motion on streets and avenues it must be tightly closed or covered, so that its contents are not exposed to view, and while being filled it shall not be uncovered for a longer time than is necessary, and every reasonable precaution must be used in transferring the contents of the householders' receptacles to prevent ashes and rubbish from blowing about.

25. *Animals.*—None but strong, servicable horses or mules shall be used in connection with any work performed under these specifications, and illtreatment or neglect of same will not be permitted.

26. *Inspection of vehicles.*—Each contractor must present all vehicles used by him for inspection at such times and places as may be designated by the commissioners.

27. *Collection of dead animals.*—The contractor for the removal of dead animals will be required to remove them promptly as they may be found and reported to him. The commissioners will, however, assume no responsibility for the correctness of such report as may be made by any employee in the service of the said District, and the contractor for the removal of dead animals shall not charge for, nor can he collect from said District, any loss or losses incurred in responding to notification for the removal of a dead animal where said animal has, prior to such contractor's arrival, been removed by some other person or where the owner of such animal refuses to consent to its removal. Each dead animal must be removed skillfully and without offense and transported in a closed vehicle to the place of disposal. Removal must take place, May to September, inclusive, within 6 hours, and from October to April, inclusive, within 10 hours after receipt of notification by the contractor by telephone or otherwise, or forthwith if directed to do so by the superintendent of street cleaning, and in the event or neglect so to remove the commissioners may perform such removal and charge the expense thereof to the contractor and may deduct and retain the cost thereof out of the moneys due or to become due to the contractor under this contract.

29. *Disinfectants.*—The contractor shall keep his plant and equipment disinfected in such manner and by the use of such disinfectants as the commissioners may direct.

30. *Collection of rubbish with other material.*—If miscellaneous refuse is collected by the contractor for the collection of any other class of material, at the same time and with the same horses, men, and vehicles as are used for the collection of such other material, such miscellaneous refuse must be kept entirely separate and distinct from such other material, inclosed in tight sacks or other approved covered receptacle, or in a part of the vehicle partitioned off from the rest of, or in racks placed above, said vehicle, and such sacks or other receptacles must not be hung from the sides or body of the vehicle and must be so closed that their contents can not escape during the process of collection and transportation. Such method of combined removal shall not be put into effect without the consent and approval of the superintendent of street cleaning.

32. *Dismissal of employees.*—If an employee of a contractor use improper language or be under the influence of liquor while on duty, or accept or demand pay from citizens for service rendered, or falsify any report he may be called upon to make, or do any other act which in the opinion of the superintendent of street cleaning is inimical to the proper and efficient prosecution of the contract, the contractor by whom he is employed, shall, upon demand, at once discharge such employee from his service, and shall forthwith furnish such employee's full name and the nature of the work performed by him to the

superintendent of street cleaning. No contractor under these specifications shall employ, on any work under his contract, any person who has been discharged under the foregoing requirements.

33. *Reports by contractor.*—The contractor for the collection of any material mentioned in paragraph 1 of these specifications shall make daily reports to the superintendent of street cleaning, on blanks approved by him, which reports shall show the number of each collection district, the number of each vehicle employed therein, and the number of full loads and parts of loads, and the weight of each, or, in the case of dead animals, the number and species collected. Such reports shall show also the number of men and of horses employed each day with each vehicle. The contractor must also furnish to said superintendent, daily, a complete list of all failures on his part to comply with the requirements of his contract which have come to his notice during the preceding day, and the reason for such failure. The contractor for the collection and the contractor for the disposal of any material aforesaid shall furnish in writing such information in reference to the conduct of work under his contract as may be required from time to time by said superintendent or by the commissioners. If such information is not supplied within two weeks from the date of request for the same, the commissioners may, in their discretion, retain such money or moneys as may be due said contractor, until he has supplied the information requested.

34. *Other business.*—No contractor shall, without the written consent of the commissioners, engage in the collection or in the disposal of any material otherwise than as provided in such contract; nor shall he use any vehicle intended for the public collection of refuse of any sort under these specifications for any other purpose, except with the written consent of the commissioners.

35. *Telephone and visits.*—The contractor for the collection and the contractor for the disposal of any material mentioned in paragraph 1 of these specifications shall provide telephone connection with the office of the superintendent of street cleaning at the contractor's expense. The contractor for the collection of any such material shall call at the main office of the superintendent of street cleaning to receive orders, in person or through some responsible agent, at such times as the superintendent or the commissioners may direct. The properly authorized officials or employees of the District of Columbia shall have the right to visit, at any hour of the day or night, the plants, stables, buildings, dumps, and all other sites in use by any of the contractors under these specifications.

36. *Supervision.*—All work shall be done under the supervision of the superintendent of street cleaning, and all details of such work as are not herein particularly specified shall be performed in a manner acceptable to him and to the commissioners.

37. *Liquidated damages.*—If the contractor fail at any time or times to promptly and properly collect, receive, or dispose of material or any part thereof, duly offered to him, as required by the contract, the commissioners shall have the right to perform such work, from time to time, and charge the expense thereof to the contractor, and deduct the same, from time to time, from any money or moneys due or to become due to him under the contract. It is hereby understood and agreed that the District of Columbia will be damaged by such failure or failures upon the part of the contractor in addition to the cost to the District of Columbia of doing said work, if done by the commissioners; that the amount of said damage is difficult, if not impossible, of definite ascertainment and proof; and it is hereby agreed that the amount of such damages exclusive of said cost shall be estimated, agreed upon, liquidated, and fixed in advance, and they are hereby agreed upon, liquidated, and fixed at the amount of \$2 for each such failure to collect garbage, night soil, or dead animals or ashes and refuse from buildings under the control of the commissioners, and the sum of \$1 for each such failure to collect ashes or refuse, exclusive, in each case, of the cost to the District of Columbia of doing said work, if the same is done by the commissioners, and the contractor hereby agrees to pay to the District of Columbia as such liquidated damages, and not by way of penalty, the said sum of \$2 for each such failure to collect garbage, night soil, or dead animals, or ashes and refuse from buildings under the control of the commissioners, and the sum of \$1 for each such failure to collect ashes or refuse, exclusive, in each case, of the cost to the District of Columbia of doing said work, if the same is done by the commissioners, and the amount or amounts of said sums which may become due to the District of Columbia, by the contractor, for liquidated damages, may be deducted from any money or moneys due or to become due to him under the contract. Nothing contained in this paragraph shall be so construed as to affect in any

manner the rights of the commissioners to annul this contract or to suspend the contractor for any cause as provided by paragraph 43 of the specifications.

38. *Employment of inspectors at expense of contractor.*—Ordinarily inspectors will be employed by the commissioners. If, however, on account of any apparent disregard by any contractor of the requirements of his contract, additional inspectors are, in the opinion of the commissioners, required, such inspectors will be employed by said commissioners in such number as they may deem necessary, and will be compensated by said commissioners at a rate not to exceed \$4 per diem each, which compensation will be charged to the contractor for the supervision of whose work such inspectors have been employed and deducted from any money due or which may become due to him.

39. *Payments.*—Payments, except those for hauling ashes and refuse from buildings under the control of the commissioners, will be made semimonthly by checks of the disbursing officer of the District of Columbia, the payment for the first half of each month to be in the nature of a payment on account, and the amount of such payment shall not exceed one-half of the amount due for the entire month. Payments for each entire month shall be one-twelfth part of the per annum contract price, less the amount paid on account for the first half of said month.

40. *Bond.*—Good and sufficient bond with sureties or a surety company satisfactory to the commissioners will be required from each contractor conditioned for the faithful performance of the contract; that the contractor will be responsible for all claims for damages to persons, property, or premises arising by reason of the operation of any equipment or plant of the contractor, or the negligence of the contractor, his agents, servants, or employees engaged in the work under the contract, or in consequence of any negligence in carrying on the work under said contract, or by or on account of any act or omission of the contractor, his servants, agents, or employees, and that the contractor will promptly make payment to all persons supplying him with labor or material in the prosecution of the work provided for in the contract. The penalty of this bond will be equal to the specified or estimated annual amount of the contract, and if the estimated annual amount of the contract is less than 25 per cent of the total contract price covering the entire term through which the said contract is in force, the penalty of the bond will be 25 per cent of said total contract price.

41. *Transfers.*—No contract or any interest therein shall be transferred by the parties to whom the award is made, and any such transfer will be null and void.

42. *Patents.*—The contractor will be required to hold the District of Columbia harmless against all claims for the use of any patented article, process, or appliance in connection with the contract herein contemplated.

43. *Failure.*—If the contractor fails to commence the work at the time specified for its commencement, or fails to prosecute the work to the satisfaction of the commissioners, or attempts to transfer or assign his contract or any interest therein, or fails to perform any of the covenants of the contract, the commissioners, on 36 hours' notice in writing, may annul the contract or contracts affected by such failure or attempted transfer or assignment; or, on such notice, the commissioners may at their election suspend the contractor from the work, and in case of such suspension may at their further election enter upon, perform, and complete said work embraced in the contract, or may employ some other person or persons to do so, or may perform part of said work and employ others to do the remainder. In case of such suspension the commissioners shall have the further right, at their election, to take possession of, without legal process, and to use such reasonable force and means as may be necessary to take possession of the plant and equipment used by the contractor upon the work and to use the same in doing the work, without compensation for such use, license so to do being hereby given by the contractor, and the contractor hereby forever releases and discharges the commissioners and the District of Columbia from any and all damages or injuries which may be sustained, suffered, or claimed by reason of such possession and use of said plant and equipment.

All cost, damage, expense, and money expended or incurred by the commissioners of the District of Columbia by reason of such failure of the contractor and the cost of completing said work shall be charged against and paid by the contractor, and any money due or to become due him under the contract shall be applied toward the payment thereof.

44. *Nuisance.*—All work done under any contract must be performed in such a manner as, in the opinion of the commissioners, will not create a nuisance nor be injurious to public health.

45. *Commissioners.*—Wherever the word "commissioners" is used, it is understood to mean the Commissioners of the District of Columbia.

46. *Supplementary service.*—If any contractor for the collection and removal of any class of material described in paragraph 1 of these specifications, fails, upon request by the commissioners, to provide in full the schedule collection service as required by the contract, the commissioners may, after one week's notice in writing to said contractor, cause to be instituted a supplementary collection service by vehicles employed under their own direction and may charge the cost of such additional service to the said contractor; and the amount of such cost will be deducted from any moneys due or to become due said contractor, and retained by the District or paid to the person or persons employed by the commissioners to do such work.

SPECIFICATIONS FOR THE COLLECTION AND DISPOSAL OF NIGHT SOIL.

[Work done under supervision of street-cleaning division.]

1. *Definition.*—The term "night soil" wherever it occurs in these specifications means the contents of all privies, and human fecal matter deposited on streets, avenues, alleys, roads, and open lots.

2. *Hours of collection.*—Night soil must be collected between 7 a. m. and 6 p. m.

3. *Time allowed for collection.*—The time allowed the contractor for any particular collection, after receipt of notice from the superintendent of street cleaning, shall not exceed 48 hours. Not more than 24 hours will be allowed to elapse between the time of collection, and disposal or removal from the District of Columbia.

4. *Receptacles and manner of collection.*—Night soil must be removed from the privies and transported to the disposal site by means of some air-tight apparatus, pneumatic or other process, satisfactory to the Commissioners of the District of Columbia, so as to prevent the contents from being agitated or exposed to the open air during the process of such removal or transportation.

Night soil intended for collection will be placed by householders in box privies constructed in accordance with the law. For the details of the construction of such privies, attention of bidders is invited to an act of Congress entitled "An act to regulate in the District of Columbia the disposal of certain refuse, and for other purposes," approved January 25, 1898. Attention is also called to certain regulations of the health department in regard to the care and cleaning of privies. The commissioners will endeavor to enforce this act of Congress and the health department regulations so far as may be practicable, but nothing in this act or in the health department regulations shall relieve the contractor from making collections of night soil when, in the opinion of the superintendent of street cleaning, such collections are necessary. If, in making the collections for which notice has been given by the superintendent of street cleaning, the contractor discovers any failure on the part of the householder to comply with the requirements of the above-mentioned act of Congress or the health department regulations, he must immediately notify the superintendent of street cleaning in writing of any such failure.

5. *Obstruction of streets, etc.*—If any street, avenue, alley, or road be obstructed so that vehicles used for the collection of night soil can not pass into, over, or through the same, the contractor must cause it to be removed to collection vehicles on the streets, avenues, alleys, or roads which are not obstructed.

6. *Collection.*—The contractor must see that the collectors employed by him close any gates which they have opened in the process of collection and leave the premises after such collection in as good condition as before the collection was made.

7. *Transportation.*—Arrangements for transportation, and the method of disposal, must be such that regular daily disposal will not be interrupted by reason of (1) the obstruction of the Potomac River by ice or otherwise, (2) the effect of bad weather on roads, (3) inadequate railway facilities.

8. *Lost articles.*—Articles of special value found in the night soil collected must be kept by the contractor in his office for a period of one year after the finding thereof.

As soon as possible after the finding thereof the contractor must cause each such article to be properly marked so as to show the date of finding and, as nearly as may be possible, the place where found. A report of the finding of any such article shall be forwarded immediately to the superintendent of street

cleaning, containing a full description of the article, name of the finder, and such other information as may be of assistance in discovering the owner.

9. *Collection vehicles.*—All collection vehicles used by the contractor must be so constructed as to be loaded and unloaded and to carry their contents without offense to the public. They must be strongly built and marked with the name and address of the contractor, and must be kept in good repair, well painted, thoroughly clean, and free from odor at all times. The contractor must present all vehicles used by him for inspection at any time or place which may be designated by the superintendent of street cleaning.

10. *Animals.*—When horses or mules are employed, none but strong, serviceable animals shall be used in connection with any work performed under these specifications, and ill-treatment or neglect of same will not be permitted.

11. *Disinfectants.*—The contractor shall keep his plant and equipment thoroughly disinfected. He shall also carry lime or other disinfectants on his collecting vehicles and each privy, after the contents have been removed, shall be thoroughly disinfected. A statement of the kinds of disinfectants to be used and the method of applying the same must be submitted to the superintendent of street cleaning for his approval previous to July 1, 1913.

12. *Notice of collection.*—The notification to collect, issued by the superintendent of street cleaning, will be based largely on requests from householders for collection. The commissioners will, however, assume no responsibility for the correctness of such notification by the superintendent of street cleaning, and the contractor shall not charge, nor can he collect from the District of Columbia, any loss or losses incurred in responding to said notification where the address given is incorrect or it is found that there is no night soil at such locality to be removed.

13. *Nuisance.*—All work done under this contract must be performed in such a manner as, in the opinion of the commissioners, will not create a nuisance nor be injurious to public health.

14. *Reports by contractor.*—The contractor shall make daily reports to the superintendent of street cleaning on blank forms approved by him, which reports shall show the kind and number of collection vehicles, the number of men, the number of horses, the number and location of sites used for disposal purposes, the number and location of transfer points, the number of other vehicles or boats used in transportation in addition to those used in the collection service, the number of air-tight receptacles of night soil collected, and the capacity of each receptacle. The contractor shall also furnish in writing such information in regard to the conduct of the work under his contract as may be required, from time to time, by the said superintendent or by the commissioners. If such information is not received within two weeks from the date of request for the same, the commissioners may in their discretion retain such money or moneys as may be due said contractor until he has supplied the information requested.

15. *Telephone and visits.*—The contractor shall provide telephone connection with the office of the superintendent of street cleaning at the contractor's expense, and shall call at the main office of the superintendent of street cleaning to receive orders, in person or through some responsible agent every day except Sundays and legal holidays. The properly authorized officials or employees of the District of Columbia shall have the right to visit, at any hour of the day or night, the plants, stables, buildings, dumps, and all other sites in use by the contractor under these specifications.

16. *Supervision.*—All work shall be done under the supervision of the superintendent of street cleaning, and all details of such work as are not herein particularly specified shall be performed in a manner acceptable to him and to the commissioners.

SPECIFICATIONS FOR THE COLLECTION AND DISPOSAL OF ASHES AND REFUSE FROM PUBLIC BUILDINGS UNDER THE CONTROL OF THE COMMISSIONERS.

[Work done under supervision of street-cleaning division.]

1. *Work to be done.*—The work to be done consists of the collection and disposal of all ashes and refuse from the following buildings under the control of the commissioners, viz, public-school buildings, houses of fire-apparatus companies, police stations, District Building, municipal lodging house, police court, public library and branches, Home for ex-Union Soldiers and Sailors, and from any other District institutions or buildings that the commissioners may order, the same to be disposed of as required by regulations of the District of Columbia. Ashes may become the property of the contractor, or, at his option, may

be deposited on the dumps designated from time to time by the commissioners and in accordance with their direction. Paper and other light refuse must be removed in sacks or bags tightly tied, or otherwise secured, so that none of the contents can escape in loading or in transportation, and such refuse may become the property of the contractor or may, at his option, be delivered to the contractor for the disposal of miscellaneous refuse at the point or points designated by said latter contractor and approved by the commissioners.

2. *Quantity.*—Nothing in this contract shall be so construed as to prevent the District of Columbia from hauling such quantities of such ashes and refuse, or from permitting others to remove so much of the same without cost to the District, as the commissioners may desire. The removal by the contractor of less than a full load will not be permitted. Refuse and ashes must be hauled separately and must not be mixed.

It is estimated that approximately 10,000 cubic yards of ashes and refuse will be offered to the contractor each year for collection and disposal, and this amount will be used in arriving at the amount of bond, but the commissioners will assume no responsibility as to the correctness of this estimate.

3. *Hours for collection.*—Collections must be made between 7 a. m. and 6 p. m.

4. *Time allowed for collection.*—Collections must be made within 48 hours after notice from the superintendent of street cleaning, and failure to make such collections will render the contractor liable to the provision of this contract providing for failure and for liquidated damages.

5. *Dumps for ashes.*—If the commissioners authorize the disposal of ashes on such public dumps as may be controlled by them from time to time, the contractor shall provide his own safeguards at such dumping places, and shall take such precautions as may be necessary to prevent accident. The commissioners will assume no liability for accidents resulting through the contractor's use of said dumping places. The superintendent of street cleaning shall station at such places a representative, who shall have general supervision and control over the points at which dumping must be done, the time of opening and closing said dump, the prevention of all fires on the dump, the trimming and handling of all material, the persons permitted on the dump, and shall determine the character of such material as is presented for disposal. Only clean ashes will be accepted at such dumps, and the representative of the superintendent of street cleaning shall be empowered to refuse all ashes mixed with other materials brought to the dump and to require such mixed material to be separated, or to order it removed forthwith. The contractor shall be bound to conduct the dumping in accordance with the directions of the superintendent of street cleaning, and the contractor must comply with such directions.

6. *Collection vehicles.*—Collection vehicles must have tight bodies and capacities of 1 cubic yard or exact multiple thereof, must be strongly built, well painted, in good repair, and plainly numbered on both sides and marked with the name and address of the collection contractor. No vehicle is to be used unless measured by the sealer of weights and measures of the District, who will mark in a conspicuous place on the body the capacity of each when filled with a "well rounded-off" load. Ashes must be transported within the District of Columbia in covered vehicles satisfactory to the commissioners.

7. *Animals.*—When horses or mules are employed, none but strong, serviceable animals shall be used in connection with any work performed under these specifications, and ill treatment or neglect of same will not be permitted.

8. *Notice of collection.*—The notification to collect, issued by the superintendent of street cleaning, will be based largely on requests from buildings for collection. The commissioners will, however, assume no responsibility for the correctness of such notification by the superintendent of street cleaning, and the contractor shall not charge nor can he collect from the District of Columbia any loss or losses incurred in responding to said notification where the address given is incorrect, or it is found that there is no ashes or refuse at such locality to be removed.

9. *Telephone and visits.*—The contractor shall provide telephone connection with the office of the superintendent of street cleaning at the contractor's expense, and shall call at the main office of the superintendent of street cleaning to receive orders in person or through some responsible agent every day except Sundays and legal holidays. The properly authorized officials or employees of the District of Columbia shall have the right to visit, at any hour of the day or night, the plants, stables, buildings, dumps, and all other sites in use by the contractor under these specifications.

10. *Supervision.*—All work shall be done under the supervision of the superintendent of street cleaning, and all details of such work as are not herein parti-

cularly specified shall be performed in a manner acceptable to him and to the commissioners.

11. *Lost articles.*—Articles of special value found in the ashes or refuse collected must be kept by the contractor in his office for a period of one year after the finding thereof.

As soon as possible after the finding thereof the contractor must cause each such article to be properly marked so as to show the date of finding and as nearly as may be possible the place where found. A report of the finding of any such article shall be forwarded immediately to the superintendent of street cleaning containing a full description of the article, name of the finder, and such other information as may be of assistance in discovering the owner.

REPORT OF THE INSPECTOR OF ASPHALTS AND CEMENTS.

WASHINGTON, September 9, 1914.

SIR: I have the honor to forward herewith several tables showing results of the operations of this office during the fiscal year ending June 30, 1914.

In connection with asphalt block referred to in Table 4, I might say as matter of record that the plant of the Washington Asphalt Block & Tile Co. was completely destroyed by fire during the morning of January 4 last. This in no way embarrassed the District, as the company's manufactured supply on hand has been adequate to meet the District needs. I am advised the plant will resume operations October next.

Municipal asphalt plant.—As you know, this plant is operated under the direction of the engineer of highways. Laboratory tests are made in this office of all materials entering into the manufacture of its product, as is also made tests of the output. Formulas as to the preparation of materials are given the superintendent by this office. The output has proven satisfactory in the repair of cuts and patchwork in asphalt pavements—product also used in the paving of Myrtle Street, between North Capitol and First Streets NE.

All other new pavements and resurfacing were, as formerly, laid under contract.

Testing of cement.—With a view of definitely determining whether or not cement actually attains its hard set within the time prescribed by specifications prescribed by Executive order covering all cement for use by the Government, i. e., 10 hours, the office during the year inaugurated the practice of shifting the hours of duty of the men engaged in making the actual physical tests so that one every fourth week works from 4 to 11 o'clock p. m., thus enabling the office to make frequent needle tests and to have under visual inspection action of the cement during the whole of the time prescribed for attainment of its hard set.

Total number of samples tested.

Asphalts:		
Bermudez	-----	9
Mexican	-----	2
Standard macadam	-----	1
Sun Co. (cement)	-----	12
Trinidad, Lake, crude	-----	1
Asphalt mixtures:		
Binder	-----	4
Block	-----	25
Block mixture	-----	23
Cement (binder)	-----	101
Cement (block)	-----	25
Cement (topping)	-----	304
Cement (concrete)	-----	15
Concrete mixture	-----	36
Topping mixture	-----	230
Topping (old surface material)	-----	11
Cement, Portland	-----	9,955
Lampblack	-----	4

Oils:

Flux	6
Fuel	18
Residuum	13
Road	30
Pitch, paving	3
Sal ammoniac	1
Sands	159
Stone:	
Binder	52
Crushed	28
Limestone dust	14
Trap-rock screenings	11
Tar	6
Miscellaneous	85
Total	11,184

ASPHALTS.

Test of samples of asphalt used in the laying and repairing of pavements for the District of Columbia showed the following percentage of bitumen soluble in carbon bisulphide:

From Cranford Paving Co.:

8 samples Bermudez, refined, representing 1,340 tons.....	93.81
2 samples Aztec asphalt cement, representing 36 tons.....	99.22

From municipal asphalt plant:

12 samples Sun Co. cement, representing 332.52 tons.....	99.13
--	-------

From Washington Asphalt Block & Tile Co.:

1 sample Trinidad Lake, crude, representing 1,300 tons.....	¹ 53.86
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ASPHALT CEMENTS.

Penetration results of asphalt binder, concrete, and topping used by the District and paving companies.

[Penetrations at 77° F.]

	Cranford Paving Co., Bermudez.		Municipal asphalt plant—Sun Co.	Washington Asphalt Block & Tile Co.—Lake Trinidad block.
	Binder.	Topping.		
Number of samples.....	101	82	229	25
Highest—				
Office.....	65	64	63	26
Yard.....	65	60		28
Lowest test—				
Office.....	51	52	46	18
Yard.....	50	50		18
Average of all samples tested:				
Office.....	60	56	53	22
Yard.....	60	56		21

BINDER STONE.

During the year there were examined 52 samples of binder stone used in the laying and repairs of asphalt pavements, with no rejections.

Cranford Paving Co.:

Samples	52
Cubic yards	5,530

¹ After refining.

ASPHALT BINDER MIXTURE.

Analysis of 4 samples taken from the Cranford Paving Co. showed an average of bitumen soluble in carbon bisulphide as follows:

Cranford Paving Co.:

Samples.....	4
Bitumen soluble in carbon bisulphide.....per cent..	4.3

ASPHALT SURFACE MIXTURE.

During the year 87 samples were collected from the Cranford Paving Co. for examination and analysis. The following tables show the maximum, minimum, and average per cent bitumen contained and the average mesh composition of mineral aggregate used:

	Samples.	Per cent bitumen.		
		Highest.	Lowest.	Average.
Cranford Paving Co.:				
Asphalt, Bermudez.....	82	11.6	9.8	10.8
Asphalt, Bermudez 75 per cent, Aztec 25 per cent.....	4	10.8	10.4	10.6
Aztec.....	1	10.5	10.5	10.5

MESH COMPOSITION OF AGGREGATE USED IN MIXTURE.

	Per cent.
Retained on sieve having—	
20 mesh per linear inch.....	6.8
40 mesh per linear inch.....	23.1
60 mesh per linear inch.....	28.8
80 mesh per linear inch.....	15.6
100 mesh per linear inch.....	6.9
Passing 100 mesh per linear inch.....	18.8

ASPHALT BLOCK.

About 882,609 paving block manufactured by the Washington Asphalt Block & Tile Co. were used in the paving of avenues, streets, and alleys of this city during the year, in the manufacture of which was used Trinidad Lake asphalt fluxed with petroleum residuum and a mineral aggregate composed of Potomac granite, trap rock, and limestone.

Average results of tests of the asphalt cement and mineral aggregate used in the manufacture of paving block.

ASPHALT CEMENT.

	As originally used in mixture.	Reduced to 50 per cent purity by addition of limestone dust for laboratory test.
Bitumen soluble in carbon bisulphide.....per cent..	60.44	50.86
Penetration at 77° F., 100 grams.....	22	17
Penetration at 115° F., 50 grams.....	115	71
Per cent of hardening after heating 300° F. for 18 hours.....	10.8	4
Per cent of loss after heating 300° F. for 18 hours.....	.7	.4
Brittleness in centimeters, drop of 25 grams, weight at 32° F.....	15	15

ASPHALT BLOCK MIXTURE.

Specific gravity (manufactured block).....	2.430
Bitumen soluble in carbon bisulphide..... per cent..	7.0
Mesh composition of mineral aggregate:	
Retained on 1/4-inch mesh sieve..... do.....	1.8
Retained on 20 mesh per linear inch..... do.....	59.0
Retained on 100 mesh per linear inch..... do.....	16.3
Passing 100 mesh per linear inch..... do.....	22.9

LIMESTONE DUST USED IN SURFACE MIXTURE.

This material is used as a filler to reduce the void in the sand used in asphalt surface mixtures. During the year there were examined 14 samples, all of which passed the required degree of fineness, i. e., all to pass a 30 and not less than 85 per cent to pass a 100-mesh sieve.

	Samples.	Tons.
Cranford Paving Co.....	8	200
Municipal asphalt plant.....	6	180

SAND USED IN SURFACE MIXTURE.

Of this material, 142 samples, representing 19,769 cubic yards, were inspected, of which 9,990 cubic yards were rejected on account of coarseness and excessive percentage of mud.

	Samples.	Accepted.	Rejected.
Cranford Paving Co.....	135	<i>Cubic yards.</i> 8,195	<i>Cubic yards.</i> 9,990
Municipal asphalt plant.....	7	1,584	.....

PETROLEUM RESIDUUM.

All residuum used during the year by the contractors in the preparation of asphalt cement was the product of the Standard Oil Co. A total of 13 samples were submitted by the contractors for tests and examination, which showed the following:

	Samples.	Pounds.
Cranford Paving Co.....	5	250,000
Washington Asphalt Block & Tile Co.....	8	400,937

	Cranford Paving Co.	Washington Asphalt Block & Tile Co.
Specific gravity:		
Highest.....	0.9481	0.9551
Lowest.....	.9057	.9367
Average.....	.9297	.9442
Gravity, Baumé:		
Highest.....	17.6	16.6
Lowest.....	24.6	19.5
Average.....	20.6	18.3
Flash (* F.):		
Highest.....	365	395
Lowest.....	320	325
Average.....	344	360
Burns (* F.):		
Highest.....	500	490
Lowest.....	380	470
Average.....	461	477
Loss at 400° F. for 30 hours:		
Highest.....	20.30	9.80
Lowest.....	1.80	.80
Average.....	7.46	6.02

OIL, AZTEC, HEAVY.

One sample was submitted from the Cranford Paving Co., representing 52,000 pounds.

Bitumen soluble in carbon bisulphide	per cent	99.78
Ash	do	.14
Specific gravity at 60° F		0.9658
Flash (New York closed tester)	degrees F	435
Burn (New York closed tester)	do	525
Loss 400° F., 19 hours	per cent	6
Water		None.

ASPHALT FLUX.

Six samples were submitted by the Cranford Paving Co., representing 300,000 pounds.

Bitumen soluble in carbon bisulphide	per cent	99.80
Ash	do	.22
Specific gravity at 60° F		1.004
Flash (New York closed tester)	degrees F	354
Burn (New York closed tester)	do	427
Loss after heating 400° F., 18 hours	per cent	4.75
Water		None.

ASPHALT CONCRETE.

During the year there were laid by the Cranford Paving Co. under contract about 57,833 square yards of asphalt concrete, laid on crushed stone, or 6-inch concrete base. The asphalt concrete mixture consisted of two parts trap rock, crushed to a size from three-fourths inch to dust, and one part concrete sand, to which was added 5 per cent limestone dust.

The stone and sand were heated to a temperature of about 300° F., the limestone being added in the cool state to the hot mixture and thoroughly mixed in an asphalt mixer. Hot asphalt cement (Bermudez) was then added and the whole thoroughly mixed for about five minutes; it was then hauled from the paving plant to the site of the work and spread over the roadbed to a thickness of 3 inches, then rolled with 5 and 10 ton steam rollers until thoroughly compact. Over this surface was then spread a thin coating of asphalt cement for the purpose of filling voids. A light coating of trap-rock screenings three-eighths to one-eighth inch was then spread on the surface as a top coating and rolled with a 10-ton steam roller.

The following is a table showing average of laboratory tests of asphalt cement and mineral aggregate used in the preparation of the asphalt concrete.

ASPHALT CEMENT.

Bitumen soluble in carbon bisulphide (not including flush coat)	7.5
Penetration at 77° F., 5 seconds, 100 grams	59.0

CONCRETE MIXTURE—MINERAL AGGREGATE MESH COMPOSITION.

Retained on—	
1-inch mesh screen	per cent 0.0
¾-inch mesh screen	do 5.0
½-inch mesh screen	do 13.7
¼-inch mesh screen	do 25.0
8 mesh per linear inch	do 14.5
10 mesh per linear inch	do 2.9
20 mesh per linear inch	do 7.9
40 mesh per linear inch	do 12.2
60 mesh per linear inch	do 6.0
80 mesh per linear inch	do 3.3
100 mesh per linear inch	do .9
Passing 100 mesh per linear inch	do 8.6
Specific gravity of stone	2.900
Specific gravity of sand	2.632
Voids in aggregate	per cent 19.9

ASPHALT SURFACE MIXTURE (ASPHALT CONCRETE)—MUNICIPAL ASPHALT PLANT.

During the year there were examined 4 samples of asphalt concrete, representing about 70 cubic yards. This material was a mixture composed of trap-rock screenings 74 per cent, fine sand 15 per cent, limestone dust 4 per cent, and asphalt cement 7 per cent (penetration at 77° F., 5 seconds, 100 grams, 51). The average mesh composition of this mineral aggregate is shown in the table below. The stone, sand, and limestone dust were heated to a temperature of about 350° F., in the heating drum of a Warren portable asphalt mixer. The hot asphalt was then added and the whole thoroughly mixed for about five minutes; it was then discharged into carts and hauled to the site of work, which consisted principally of repairs to asphalt pavements. Examination of the material produced showed an average of bitumen soluble in carbon bisulphide 6 per cent (not including flush coat).

MINERAL AGGREGATE MESH COMPOSITION.

Retained on—	Per cent.
$\frac{1}{8}$ -inch mesh	4.2
$\frac{1}{4}$ -inch mesh	18.6
$\frac{1}{2}$ -inch mesh	26.2
8 mesh per linear inch	9.6
10 mesh per linear inch	1.4
20 mesh per linear inch	3.2
40 mesh per linear inch	10.9
60 mesh per linear inch	11.7
80 mesh per linear inch	4.4
100 mesh per linear inch	1.0
Passing 100 mesh per linear inch	8.8

There were examined 230 samples of asphalt concrete mixture, representing about 6,375 cubic yards. This material was a mixture composed of old asphalt surface mixture (topping and binder) which, after being removed from the street, was hauled to the municipal asphalt plant and crushed in a Noyes rotary crusher to a fineness ranging from 1 inch to dust; to this material was then added trap-rock screenings, fine sand, limestone dust, and asphalt cement in about the following proportions: Old asphalt surface material, 66 per cent; fine sand, 23 per cent; trap-rock screenings, 6 per cent; limestone dust, 2 per cent; and asphalt cement, 3 per cent (penetration at 77° F., 5 seconds, 100 grams 53), the whole being mixed as above described, under asphalt concrete, and used for the same purpose.

Following are average results of tests showing percentage of asphalt and mesh composition of mineral aggregate of the old asphalt surface material.

OLD ASPHALT SURFACE MIXTURE (AFTER CRUSHING).

Bitumen soluble in carbon bisulphide.....per cent.. 6

MINERAL AGGREGATE, MESH COMPOSITION.

Retained on—	Per cent.
$\frac{1}{8}$ -inch mesh	11.3
$\frac{1}{4}$ -inch mesh	18.9
8 mesh per linear inch	11.6
10 mesh per linear inch	1.3
20 mesh per linear inch	3.9
40 mesh per linear inch	14.7
60 mesh per linear inch	14.6
80 mesh per linear inch	8.5
100 mesh per linear inch	2.2
Passing 100 mesh per linear inch	13.0

ASPHALT CONCRETE MIXTURE (AFTER PRODUCTION AVERAGE).

Bitumen soluble in carbon bisulphide.....per cent.. 8

MESH COMPOSITION, MINERAL AGGREGATE.

Retained on—	Per cent.
$\frac{1}{8}$ -inch mesh	3.2
$\frac{1}{4}$ -inch mesh	12.2
8 mesh per linear inch	10.0
10 mesh per linear inch	1.7
20 mesh per linear inch	5.1
40 mesh per linear inch	19.8
60 mesh per linear inch	20.1
80 mesh per linear inch	10.1
100 mesh per linear inch	2.5
Passing 100 mesh per linear inch	15.3

TRAP-ROCK SCREENINGS.

During the year there were examined 11 samples of trap-rock screenings used in the laying of asphalt concrete pavements with no rejections.

	Samples.	Cubic yards.
Cranford Paving Co.	6	3,750
Municipal asphalt plant.	5	435

HYDRAULIC CEMENTS.

Barrels inspected and the average results of tests on same—Portland cement.

	Atlas.	Dragon.	Nazareth.	Saylor's.	Security.	Tidewater.	Vulcanite.
Number of barrels	170	150	1,730	1,440	23,160	55,865	17,680
Number of samples	17	15	173	144	2,316	5,586	1,768
Fineness passing 100-mesh sieve, per cent.	94.9	94.0	97.2	96.2	95.7	90.9	94.1
Fineness passing 200-mesh sieve, do.	78.2	80.1	84.3	81.0	79.9	78.4	77.8
Initial set (hours and minutes)	2-0	3-25	4-10	5-0	4-14	4-28	5-13
Hard set (hours and minutes)	4-0	5-20	6-26	7-21	6-41	7-24	5-18
Per cent water used:							
Neat cement	23.0	25.0	23.1	23.0	22.8	22.7	22.4
3 parts Ottawa sand	10.3	10.7	10.3	10.3	10.3	10.1	10.3
Temperature of air and water	91	86	83	80	81	77	82
Tensile strength in pounds per square inch:							
Neat, 7-day	683	702	849	761	758	755	767
Neat, 28-day	693	742	881	833	823	840	822
Sand (1.3), 7-day	365	361	449	305	324	312	347
Sand (1.3), 28-day	437	429	469	378	412	403	438
Specific gravity	3.137	3.232	3.147	3.183	3.145	3.076	3.179

In testing cement samples are taken from 10 barrels of each 100-barrel lot and tested individually. The 10,019 samples tested represent 100,195 barrels, of which 1,370 were rejected.

Cement tested and by whom submitted.

	Barrels.
Brenizer, W. F. (Dragon)	150
Cranford Paving Co. (Vulcanite)	17,680
District of Columbia:	
Nazareth	1,730
Security	170
Tidewater	51,495
	<u>53,395</u>
Gunmel, E. G.:	
Atlas	170
Tidewater	1,650
	<u>1,820</u>
Harper & Voigt (Tidewater)	920
Hoge & Luebker Co. (Security)	22,990
Q Street Bridge (Saylor's)	1,440
Washington Asphalt Block & Tile Co (Tidewater)	1,800
Total	<u>100,195</u>

ASPHALT SURFACE MIXTURE (ASPHALT CONCRETE)—MUNICIPAL ASPHALT PLANT.

During the year there were examined 4 samples of asphalt concrete, representing about 70 cubic yards. This material was a mixture composed of trap-rock screenings 74 per cent, fine sand 15 per cent, limestone dust 4 per cent, and asphalt cement 7 per cent (penetration at 77° F., 5 seconds, 100 grams, 51). The average mesh composition of this mineral aggregate is shown in the table below. The stone, sand, and limestone dust were heated to a temperature of about 350° F., in the heating drum of a Warren portable asphalt mixer. The hot asphalt was then added and the whole thoroughly mixed for about five minutes; it was then discharged into carts and hauled to the site of work, which consisted principally of repairs to asphalt pavements. Examination of the material produced showed an average of bitumen soluble in carbon bisulphide 6 per cent (not including flush coat).

MINERAL AGGREGATE MESH COMPOSITION.

Retained on—	Per cent.
$\frac{1}{8}$ -inch mesh.....	4.2
$\frac{1}{4}$ -inch mesh.....	18.6
$\frac{1}{2}$ -inch mesh.....	26.2
8 mesh per linear inch.....	9.6
10 mesh per linear inch.....	1.4
20 mesh per linear inch.....	3.2
40 mesh per linear inch.....	10.9
60 mesh per linear inch.....	11.7
80 mesh per linear inch.....	4.4
100 mesh per linear inch.....	1.0
Passing 100 mesh per linear inch.....	8.8

There were examined 230 samples of asphalt concrete mixture, representing about 6,375 cubic yards. This material was a mixture composed of old asphalt surface mixture (topping and binder) which, after being removed from the street, was hauled to the municipal asphalt plant and crushed in a Noyes rotary crusher to a fineness ranging from 1 inch to dust; to this material was then added trap-rock screenings, fine sand, limestone dust, and asphalt cement in about the following proportions: Old asphalt surface material, 66 per cent; fine sand, 23 per cent; trap-rock screenings, 6 per cent; limestone dust, 2 per cent; and asphalt cement, 3 per cent (penetration at 77° F., 5 seconds, 100 grams 53), the whole being mixed as above described, under asphalt concrete, and used for the same purpose.

Following are average results of tests showing percentage of asphalt and mesh composition of mineral aggregate of the old asphalt surface material.

OLD ASPHALT SURFACE MIXTURE (AFTER CRUSHING).

Bitumen soluble in carbon bisulphide.....per cent... 6

MINERAL AGGREGATE, MESH COMPOSITION.

Retained on—	Per cent.
$\frac{1}{8}$ -inch mesh.....	11.3
$\frac{1}{4}$ -inch mesh.....	18.9
8 mesh per linear inch.....	11.6
10 mesh per linear inch.....	1.3
20 mesh per linear inch.....	3.9
40 mesh per linear inch.....	14.7
60 mesh per linear inch.....	14.6
80 mesh per linear inch.....	8.5
100 mesh per linear inch.....	2.2
Passing 100 mesh per linear inch.....	13.0

ASPHALT CONCRETE MIXTURE (AFTER PRODUCTION AVERAGE).

Bitumen soluble in carbon bisulphide.....per cent... 8

MESH COMPOSITION, MINERAL AGGREGATE.

Retained on—	Per cent.
$\frac{1}{8}$ -inch mesh	3.2
$\frac{1}{4}$ -inch mesh	12.2
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Barrels inspected and the average results of tests on same—Portland cement.

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Fineness passing 100-mesh sieve. per cent.	94.9	94.0	97.2	96.2	95.7	90.9	94.1
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Initial set (hours and minutes)	2-0	3-25	4-10	5-0	4-14	4-28	5-13
Hard set (hours and minutes)	4-0	5-20	6-26	7-21	6-41	7-24	5-18
Per cent water used:							
Neat cement.	23.0	25.0	23.1	23.0	22.8	22.7	22.4
3 parts Ottawa sand	10.3	10.7	10.3	10.3	10.3	10.1	10.3
Temperature of air and water.	91	86	83	80	81	77	82
Tensile strength in pounds per square inch:							
Neat, 7-day.	683	702	849	761	758	755	767
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Cement tested and by whom submitted.

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Gummel, E. G.:	
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Harper & Voigt (Tidewater)	920
Hoge & Luebker Co. (Security)	22,990
Q Street Bridge (Saylor's)	1,440
Washington Asphalt Block & Tile Co (Tidewater)	1,800
Total	100,195

Table No. 1 shows total number samples tested or analyzed during the year. Most of these were collected direct by this office, others were submitted by various departments of the District, reports showing results submitted to the immediate heads thereof.

The work of the office has been kept current throughout the year.

Very respectfully,

J. O. HARGROVE,

Inspector of Asphalts and Cements.

Capt. MARK BROOKE,

Corps of Engineers, United States Army,

Assistant to Engineer Commissioner, District of Columbia.

REPORT OF THE SURVEYOR.

WASHINGTON, September 18, 1914.

SIR: I have the honor to transmit herewith the following report of the operations of this office, including the street-extension division, for the year ended June 30, 1914.

For all work done for the citizens of the District known as "private work" fees are charged, the amount of each fee being determined by a schedule approved by the commissioners.

The receipts for that class of work during the past fiscal year amounted to \$13,535.90. This shows a decrease over the receipts for the previous year, due no doubt to the general building depression which prevails. Building operations during the past year have not been so extensive as in former years, and this very materially affects the receipts of this office. However, the office has been engaged in a large amount of other classes of work, such as surveys for the various District departments and the United States Government.

The number of orders received for which fees are charged was 3,329. These do not include surveys for the District of Columbia or the United States.

The number of surveys made for the various District departments, such as surveys of streets, alleys, schoolhouse sites, engine-house sites, etc., was 82.

In addition to this work, the office has made during the past year a topographical survey of the 1,500 acres adjacent to the Occoquan workhouse for the reformatory. This survey required about three months of field work by a large field party from this office.

Much work has also been done for the United States Engineer's office in connection with the condemnation of land for the reclamation of the Anacostia River flats.

In addition to the above, a survey was made for the addition to the Zoological Park between Zoological Park and Connecticut Avenue and also a number of surveys under the excise regulations to determine distances between saloons and schoolhouses and churches.

Under the head of private work, the total number of new blocks created in new subdivisions of agricultural land was 59, with a total number of new lots of 2,706, both of which are a decided increase over the previous year.

On account of the falling off in private survey work the appropriation for per diem employees was not fully expended, returning a balance of about \$1,600; but it is earnestly hoped that the per diem appropriation for the next fiscal year will not be reduced on this account, because it is believed that the past year was an off year, and the office, while it could have used this appropriation for certain lines of work, adopted the course that was thought proper under the circumstances.

The following table is submitted for your information, showing the relation of the work for the past fiscal year with that of the preceding year:

	Fiscal year.	
	1912-13	1913-14
FOR PRIVATE PARTIES.		
Individual lots or parts of lots surveyed in city and county.....	2,254	1,505
Certificates of survey issued covering one or more lots.....	1,146	1,018
Duplicates of above recorded in survey certificate books.....	1,146	1,018
Separate surveys made to verify walls.....	932	748
Individual buildings inspected as to location of new walls.....	2,302	1,594
Walls moved before final certification.....	948	761
Large tracts in county surveyed, subdivided and recorded.....	22	19
Outline surveys in county of unsubdivided tracts.....	55	30
Subdivision blanks prepared.....	396	358
Duplicate subdivision blanks prepared for assessor.....	396	358
Subdivisions recorded.....	333	303
Total of individual new lots in subdivisions.....	2,358	2,706
Plats of one or more recorded lots to accompany applications for building permits (commonly called building plats).....	1,290	973
Plats made under regulations for theaters, stables, motors, etc.....	111	199
Indorsements on survey plats.....	1,146	1,018
Indorsements on wall survey plats.....	932	748
Estimates of cost issued in triplicate.....	3,874	3,329
Plats made up on order of private parties.....	2,947	2,597
Total of fees paid to collector of taxes by private parties.....	\$16,608.32	\$13,535.90
FOR THE DISTRICT OF COLUMBIA.		
Surveys for the District of Columbia.....	104	82
Plats recorded (condemnations, dedications, etc.).....	63	55
Postal-card reports concerning walls to owners.....	932	748
Reports concerning walls to building inspector.....	971	783
Assessment and taxation plats recorded.....	252	195
MISCELLANEOUS.		
Total of surveys for the District of Columbia and private parties.....	2,259	1,897
Total of plats, public and private, including plats drawn in books.....	5,315	4,720

STREET EXTENSION.

Attached to this report is report of the assistant surveyor for the fiscal year ended June 30, 1914, as to matters relative to streets and alleys.

There were in court during the past year 15 cases for the widening and extension of alleys, of which 6 jury verdicts were confirmed and 8 new cases were filed.

There were in court 28 cases for the widening and extension of streets and condemnations for parks, of which 9 jury verdicts have been confirmed, with 18 new cases filed, the principal ones being for the widening of Georgia Avenue, Benning Road, Anacostia River Park, and New Hampshire Avenue extended.

There are other proposed streets that should certainly be condemned, and which it is believed are as important for the future development of their respective sections and as much in the public interest as those in process of condemnation, and it is recommended that, under authority already vested in the commissioners, Calvert Street and Cleveland Avenue from Connecticut Avenue westward be condemned. This would make accessible to the city a section now very much pocketed for lack of streets to the main thoroughfares of the city. The longer this is delayed the more expensive it will be to those who will be compelled to stand the assessments for benefits. The extension of these streets would not entail any cost upon the District, and it is believed that a majority of the property owners who would have to pay for the condemnation would be in favor of their extension. A fact that should be brought to your attention in connection with this matter is that, while the condemnation would be at no cost to the District, the enhancement to the property in this immediate neighborhood would increase the taxes in no small amount.

Spring Road, from Georgia Avenue to Twentieth Street, is another highway of great importance, and this office has previously recommended this condemnation. The acquisition of the land for the extension of this street some time in advance of its physical improvement would be of great benefit to the property

in this neighborhood, and a personal inspection of the conditions on the ground will forceably convince one that this is a very important matter. The development of property is being retarded and improvements have gone beyond this section, leaving a belt along this proposed street in a very unsightly and unsatisfactory condition. The grades should be established so that the filling of private land could be made to conform to the new street, and thus eliminate a very serious menace to the health of this community.

Thirteenth Street should be extended from Spring Road to Colorado Avenue. A large part of this street has already been dedicated by various property owners, and it is only fair to those who have already dedicated to have it opened through to the city.

There are also other streets that might very properly be extended.

An investigation of the street extensions already made will show that they have been of great benefit to the sections through which they pass, and in all cases the increased taxation due to the improvement has been a source of great revenue to the District.

I have only to refer you to such condemnation cases as Eleventh Street north of Florida Avenue, Sixteenth Street north of Florida Avenue, and Rhode Island Avenue in order that you might get some idea of the importance of these street extensions to the District. Washington City has grown beyond its original Federal limits, largely on account of the extension of streets either by condemnation or dedication. The result has been that what was originally the boundary of the city only remains now as an imaginary line, and a new Washington of modern homes is coincident with the limits of the District of Columbia.

PARKS.

The last two District appropriation acts contained an appropriation of \$25,000 for the acquisition of small parks at the intersection of streets outside of the limits of the original city. In this connection eight small triangles were selected, and are now in process of condemnation. This will about use the first \$25,000. There have been no selections made for the second appropriation.

In this connection I wish to call your attention to the item in the sundry civil appropriation bill for the year ending June 30, 1915, restricting the commissioners to acquiring parks only where they are entirely surrounded by streets. This prevents the commissioners from acquiring three of the eight already selected, namely, in square 2594, square 2841, and square 3353. It also prevents the commissioners from acquiring others that would be very desirable. This amendment to the law should be changed.

Steps should also be taken by the commissioners to acquire Piney Branch Parkway running northeasterly from Sixteenth Street and Piney Branch. This land is increasing rapidly in value, and much of the natural beauty, which especially adapts it for park purposes, is being destroyed. This park is recommended by the park commission in their report of 1902; it has also been previously recommended by a former board of commissioners. To a casual observer it would appear that some action should be taken at once to prevent the destruction of this natural park and to prevent it from becoming a dump and a blight to this section of the District.

All are familiar with the efforts made by the citizens of the District and the United States to acquire Rock Creek Valley from the Zoological Park to the Potomac Park, so that a great nuisance could be eliminated. It is only a question of time when Piney Branch Valley will be in a similar condition and the same great unsanitary dump as Rock Creek Valley.

RENO SUBDIVISION.

In 1869 the subdivision of Reno was made, containing about 50 acres, and situate just north of Tenleytown. This subdivision has streets with a width of only 33 feet, and is entirely out of harmony with the highway plan. It is on an elevation of about 420 feet, being the highest point in the District of Columbia, and one of the most beautiful locations in the District; but, on account of its very narrow and bad streets, it has not developed like the surrounding country, and is a hindrance to the growth of this section, preventing the extension of streets based on the highway plan and retarding general development. Something should be done to eliminate this subdivision and to resubdivide it in accordance with the highway plan, as it is practically surrounded by streets already publicly owned. Land within this subdivision is probably worth only

5 cents per square foot, while much of the land in this vicinity is worth 50 cents. This shows more forcibly than any argument the necessity for the correction of this subdivision. The title to the lots in this subdivision is in many small owners, and it is not believed that anyone but the Government could handle the situation. While it might be somewhat difficult and the action to be taken a little drastic, it is believed the only way to correct this condition would be by extending these streets in accordance with the highway plan by condemnation, and to acquire the lots remaining and resubdivide them into desirable building lots and sell them. This would clear up a very objectionable locality, and at the same time it is believed it could be accomplished without expense and would in the end add revenue from the taxes.

SURVEYS OF OLD SUBDIVISIONS.

The appropriation of \$2,500 for surveys of old subdivisions has been expended in making comprehensive surveys of the following subdivisions and property lines: Takoma Park; Harlem; Wisconsin Avenue property, R Street to Thirty-fifth Street; Petworth and Brightwood Parks. In these subdivisions there were 106 stones set marking the original block corners. Georgia Avenue between Rock Creek Church Road and the District line, Palisades of the Potomac, Woodley Road and Cathedral Avenue north of Woodley Park, Lincoln, Twining City, Square 2588. Two hundred monuments have been planted to mark permanently the lines of the subdivisions named, involving the work of a field party about two and one-half months in the field and about 85 days' office work.

This work will be of great advantage to the office in the surveys of individual lots in any of the subdivisions named.

I wish to express my appreciation for the cooperation and support of the employees of this office during the past year, and to commend them for their universal courtesy to the public.

Very respectfully,

MELVIN C. HAZEN,
Surveyor, District of Columbia.

Capt. MARK BROOKE,
*Corps of Engineers, United States Army,
Assistant Engineer Commissioner, District of Columbia.*

STREET-EXTENSION DIVISION.

WASHINGTON, September 17, 1914.

SIR: I have the honor to submit herewith report of the operation of the street-extension division for the fiscal year ended June 30, 1914:

The general authority granted the Commissioners of the District of Columbia to open streets to conform with the plan of the permanent system of highways by item contained in the District appropriation bill for year ended June 30, 1914, approved March 4, 1913, and a new method of notice by publication provided for by item in urgent deficiency bill approved October 22, 1913, have greatly facilitated the acquisition of streets and alleys by condemnation. It has thus become possible to proceed with a number of important street extension and widening cases without waiting for special legislation.

Surveys requiring much time in both field and office have been made for the following street extension and widening projects: Calvert Street and Cleveland Avenue, Cathedral Avenue and Woodley Road, opening First Street and a minor street through Keating estate, Georgia Avenue from Rock Creek Church Road to District line, New Hampshire Avenue from Petworth to District line, Spring Road and Perry Place.

Surveys for condemnation of parts of the Anacostia River frontage have been made where the United States Engineer's Office desired to proceed with reclamation in advance of acquisition of the entire river front for park purposes.

Survey and plats have been made for addition to the Zoological Park, a condemnation proceeding by the United States.

Submitted herewith is a table showing action taken on all condemnation cases filed during the year, and action on cases previously filed where such cases were not finally disposed of prior to July 1, 1913.

Very respectfully,

J. B. SHINN,
Assistant Surveyor, District of Columbia.

The SURVEYOR.

Condemnation Cases.

STREET EXTENSIONS AND PARKS.

Location.	Court docket No.	Act No.	Act approved.	Case filed.	Verdict filed.	Verdict.		Action on verdict.
						Damages.	Benefits.	
Minnesota Avenue, Pennsylvania Avenue to Sheriff Road.	823	267	Feb. 25, 1909	May 22, 1909	.....	.....	.....	Postponed indefinitely subject to notice, Oct. 18, 1912.
Minor Street, square 2885	1037	.....	.....	May 31, 1912	Mar. 6, 1914	\$4,214.88	\$4,571.94	Confirmed Apr. 17, 1914.
Minor Street, square 3532	1041	.....	.....	June 19, 1912	Mar. 5, 1914	2,434.26	2,847.74	Do.
Road along Anacostia River	1049	170	May 10, 1910	Nov. 27, 1912	.....	.....	.....	Order dismissing proceeding Apr. 10, 1914; appeal taken by District of Columbia.
Establishment of building-restriction line, south side Park Road, north side Kenyon Street, south side between Thirteenth and Fourteenth Streets	1050	.....	.....	.....do.....	.....	.....	.....	Postponed indefinitely.
Establishment of building-restriction line, Columbia Road, south side, between Fourteenth and Fifteenth Streets.	1053	.....	.....	Jan. 25, 1913	.....	.....	.....	Do.
Extension Rock Creek Drive	1061	201	June 26, 1912	Apr. 30, 1913	.....	.....	.....	Case dismissed Dec. 22, 1913; appeal by District of Columbia.
Fortis Davis and Dupont and Alabama Avenue.	1062	201	.....do.....	.....do.....	Apr. 22, 1914	38,067.45	1,757.60	Confirmed May 26, 1914.
Extension of Western Avenue	1064	404	Mar. 2, 1913	June 19, 1913	Jan. 28, 1914	11,818.20	12,480.28	Confirmed Mar. 11, 1914.
Establishment of building line on south side Lanier Place between Adams Mill Road and Ontario Road.	1067	.....	.....	July 9, 1913	Nov. 19, 1913	9,659.80	10,077.20	Confirmed Jan. 12, 1914.
Extension of New Hampshire Avenue	1068	413	Mar. 3, 1913	July 14, 1913	June 22, 1914	.....	.....	Confirmed Jan. 28, 1914.
Anacostia River Park, squares south of 1117, 1124, 1131, 1147, south of 1149.	1069	435	Mar. 4, 1913	July 16, 1913	Jan. 16, 1914	20,000.00	.....	.....
Minor Street, square 5805	1071	.....	.....	Oct. 20, 1913	Feb. 20, 1914	2,500.00	2,906.31	Confirmed Apr. 1, 1914.
Parks: Squares 2560, 2594, west of 2875, 2841, 3099, 3332, 3353, 5607.	1076	435	Mar. 4, 1913	Nov. 1, 1913	.....	.....	.....	Cause dismissed by attorney for District of Columbia Apr. 1, 1914.
Highway and park along Anacostia River, parcels 210, 211, 217, 218, 224.	1078	435	.....do.....	Nov. 18, 1913	June 19, 1914	.....	.....	.....
Extension Kane Place, square 5155	1084	.....	.....	Jan. 27, 1914	Mar. 24, 1914	506.90	\$20.60	Confirmed May 21, 1914.
Extension Shannon Place, square 5783	1086	.....	.....	.....do.....	Mar. 23, 1914	1,327.24	1,621.24	Do.
Extension Girard Street, square 2669	1095	.....	.....	Feb. 27, 1914	.....	.....	.....	.....
Parks: Squares 2660, 2694, west of 2675, 2841, 3099, 3332, 3333, 5607.	1098	435	Mar. 4, 1913	Apr. 1, 1914	.....	.....	.....	.....
Madison Street from Fourteenth Street to Colorado Avenue.	1099	.....	.....	.....do.....	.....	.....	.....	.....
Extension Second Street and V Street NE	1100	.....	.....	Apr. 1, 1914	.....	.....	.....	.....

1101	Buchanan Street, Piney Branch Road to Avenue of the Presidents.	do.	June 30, 1914
1102	Tennypson Street through parcel 40/21.	Apr. 3, 1914	June 30, 1914
1103	White Place S.E.	do.	do.
1104	Twenty-fifth Street east.	do.	do.
1105	Widening Benning Road.	Apr. 21, 1914	June 30, 1914
1106	Widening Georgia Avenue.	do.	do.
1111	Sixteenth and Girard Streets N.E.	do.	do.

Condemnation Cases—Continued.

ALLEYS.

Location.	Court docket No.	Case filed.	Verdict filed.	Verdict.		Action on verdict.
				Damages.	Benefits.	
Square 615.....	866	Mar. 22, 1910				Indefinitely continued.
Square 2621.....	1006	Feb. 6, 1912				Do.
Square 2551.....	1031	May 10, 1912	Feb. 21, 1914	\$2,560.50	\$2,933.15	Confirmed Apr. 17, 1914.
Square 2492.....	1043	June 24, 1912	Mar. 19, 1914	1,803.37	2,209.65	Confirmed May 21, 1914.
Square 957.....	1051	Dec. 10, 1912	Mar. 11, 1914	1,194.65	1,617.55	Confirmed Apr. 17, 1914.
Square 2537.....	1056	Feb. 5, 1913				Indefinitely continued.
Square 1045.....	1057	Feb. 7, 1913	Mar. 23, 1914	774.96	1,047.10	Confirmed May 21, 1914.
Square 2839.....	1083	Jan. 27, 1914	June 29, 1914			
Square 1007.....	1087	.....do.....				
Square 3233.....	1088	.....do.....				
Square 2841.....	1089	Feb. 2, 1914	May 25, 1914	1,097.76	1,389.56	Confirmed June 30, 1914.
Square 1077.....	1094	Feb. 27, 1914	May 25, 1914	426.22	691.38	Do.
Square 2851.....	1112	June 30, 1914				
Square 502.....	1113	.....do.....				
Square 2891.....	1114	.....do.....				

REPORT OF THE SUPERINTENDENT OF TREES AND PARKINGS.

WASHINGTON, D. C., September 5, 1914.

SIR: I have the honor to submit my twenty-ninth annual report, dealing with the operations of the trees and parkings office for the fiscal year ended June 30, 1914.

PLANTING.

The planting of young trees on recently improved streets to extend the system and the filling of existing vacancies in the established lines shows a decided decrease because of the great many trees blown down throughout the city by one of the severest storms that ever visited this section. The great amount of money required to clean up the debris prevented extensive preparation of tree holes for the planting during the fall and spring seasons, the proper time for this work. Two thousand two hundred and eighty-seven trees were transplanted from the nurseries to their permanent positions on the streets, a decrease of 2,284 trees from last year's record.

The planting of young trees continues to be a costly item, in view of the existing high cost of labor and materials and the necessity for longer hauls due to the rapid growth of the city, especially the replacing of trees in scattered locations.

Two thousand one hundred and ninety-four of the total number planted were set at the curb line, 58 in the public parking (4 of which were planted in the central parking on Fourteenth Street NW., north of Kennedy Street, to replace those that died), 3 in school grounds, 4 in playgrounds, and 28 in the grounds of the Anacostia pumping station.

TREES PLANTED.

Fall season.		Spring season.	
Elms.....	63	Elms.....	124
Gingkos.....	59	Gingkos.....	23
Lindens.....	35	Lindens.....	13
Maples:		Maples:	
Norway.....	272	Norway.....	228
Silver.....	4	Silver.....	28
Sugar.....	122	Sugar.....	134
Oaks:		Oaks:	
Pin.....	570	Pin.....	141
Red.....	116	Red.....	58
Sycamores.....	202	Sycamores.....	95
Total.....	1,443	Grand total.....	2,287

NURSERIES.

Coordinate with tree-planting work, a large number of seedlings of various kinds, as herein enumerated, were transplanted from seed beds to nursery rows at the E Street nursery. This work shows a decrease of 1,750 less than the corresponding period last year. No seedlings were transferred to the nursery rows at the Georgia Avenue nursery. These trees will be ready for street planting in about four years. In addition the nurseries are fully stocked with seedlings in beds, which are coming on to take the places of those transferred to their permanent positions on the streets.

It was found practicable to purchase 1,000 Vermont sugar maple and 1,000 Norway maple seedlings (imported stock) this spring, and they have been placed in temporary rows, but will be transferred to the nursery rows next spring. These seedlings are doing very nicely up to the present time.

The following table shows the number of seedlings transferred from seed beds to the nursery rows:

Elms.....	262
Gingkos.....	431
Lindens.....	504
Maples:	
Norway.....	1,325
Sycamore.....	316
Oaks:	
Pin.....	717
Red.....	2,035
Total.....	5,590

The shops at the E Street nursery are well equipped for the construction of wooden tree boxes, and the cost of making the same has been reduced considerably since this shop has been in operation.

TRIMMING.

Little progress was made upon the general trimming of street trees, principally because of the severe storm that visited this city the last part of July, 1913, when the trees were heavy with foliage, and many trees at the time were either blown down or so badly broken that their removal was necessary, while many others had to be trimmed to insure future shape, a great many remaining at this time in need of similar treatment.

The storm referred to taxed our force to the utmost, as it required the covering of practically the entire tree-planted district. A great many small trees which had become loosened had to be restaked, strapped, and braced, and the same would have been destroyed in many cases except for prompt attention.

The streets being blocked in the northwest and southwest sections, and in many cases trees lying on houses, the work of relieving these conditions had to be pushed as rapidly as possible, and a great amount of money was expended for extra labor and teams to meet this emergency.

I would state, however, the damage from this storm was not as great in the northeast and southeast sections where the old silver maples had been severely trimmed (topped off) a few years ago. The silver maples in the northwest and southwest sections should receive similar treatment as rapidly as funds can be spared for the purpose. A great many individual requests for the trimming of trees throughout the city were received, especially the shaping of trees that had been disfigured by the storms, and these were given prompt treatment and at the same time any others in the immediate vicinity, requiring similar treatment were given attention, thereby preventing another trip to the same locality.

REMOVING.

The following table shows the kinds and number of trees removed during the year. Careful attention is always given to removal requests, and many growths are saved each year by suggested changes in the location of drive-ways, vaults, etc. In the cases of dead trees removed, the table gives the causes of their deaths as accurately as can be ascertained. Attention is again

called to the fact that a number of trees are destroyed each year by the escape of illuminating gas, but the gas companies are giving leaks attention promptly, and it is believed that a number of trees have been saved because of this prompt treatment.

Statement of trees removed during the year.

Allanthus.....	5	Oaks:	
Althæa.....	6	Black.....	5
Arbor vitæ.....	1	Pin.....	88
Ash.....	12	Spanish water.....	3
Black walnut.....	1	White.....	14
Catalpa.....	20	Red.....	83
Cedar.....	8	Orange. Osage.....	3
Cherry.....	2	Pear.....	3
Elm.....	82	Pine.....	1
Gingkos.....	14	Poplars:	
Horse chestnut.....	3	Aspen.....	26
Hickory.....	1	Athenian.....	20
Linden.....	98	Balsam.....	8
Locust.....	68	Carolina.....	511
Maples:		Tulip.....	25
Norway.....	218	Lombardy.....	46
Red.....	14	Varigated leaf.....	1
Silver.....	617	Turkestan.....	2
Sugar.....	130	Sycamore.....	224
Scarlet.....	1	Willow, weeping.....	1
Sycamore.....	1		
Mulberry, paper.....	5	Total.....	2,514
Negundo.....	143		

Causes of removals or deaths.

Dead, decayed, and dangerous.....	746
Inferior and condemned varieties.....	336
To relieve excessive shade.....	28
Street improvements, driveways, buildings, etc.....	489
Improvements of parkings.....	4
Improvement of alleys.....	5
Accidents and storms.....	860
To accommodate lamps.....	18
Injurious to curb trees.....	28
Total.....	2,514

Of the dead trees included in the above, it was ascertained that 95 were destroyed by illuminating gas, 48 by horse bites, 148 by drought, 11 by salt water, 73 by abnormal moisture supply, 43 by the mutilation of roots, 10 by being girdled, 25 by being filled around, 2 by frost blight, 11 by insects. The remaining were unexplained.

Trees at the curb removed.....	2,197
Trees in the parkings removed.....	214
Trees in the sidewalk removed.....	87
Trees in school grounds removed.....	5
Trees in roadways removed.....	2
Trees in alleys removed.....	2
Trees on private property.....	7
Total.....	2,514

SPRAYING.

1. *Leaf-eating insects.*—The spraying of the city trees has become an annual necessity, and during the month of July of the last fiscal year it was found necessary to spray the trees infested with the fall webworm and the tussock moth, two of the worst midsummer enemies to shade trees. It was also found necessary to burn, with hot blast torches, the entire northeast section between

East Capitol Street and Florida Avenue, and North Capitol Street and Fifteenth Street for the destruction of egg masses on the trunks, and in that way prevent the hatching out of a great many insects that would have infested the trees later.

Early in May of this year the elms throughout the city were sprayed with arsenate of lead for the destruction of the elm-leaf beetle. The last part of May the fall webworm appeared on the lindens, Norway and silver maples, sycamores, and other varieties and spraying operations were resumed.

During the month of June all the trees throughout the city were severely infested with insects, and it was necessary to continue spraying all through the month. It was, however, observed that the trees that were sprayed in the early spring were not attacked during the month of June. It is the intention of this office to spray all the trees on the streets in the early spring as soon as the foliage has obtained normal size, and in this way poison their food supply before they make their appearance.

The following table shows the extent of spraying for leaf-eating insects during the year:

Ash	24
Catalpa	29
Elms	9,850
Lindens	6,827
Locust, honey	102
Maples:	
Norway	3,424
Silver	2,890
Sugar	98
Sycamore	15
Negundo	47
Oaks, pin	360
Poplars, tulip	114
Sycamore	4,016
Others	525
Total	28,321

Unit cost of spraying (labor and materials), \$0.073.

2. *Scale insects*.—Early in March, when the trees were still dormant, this office sprayed trees with lime sulphur for the "obscure scale," "Eriococcus quercus," and elm-tree scale. The scale insects are very small and live under a scale that forms over them, and in order to reach the insect and kill it the poison must penetrate this protection. While this treatment can be used during the summer, it can be carried on to better advantage after the foliage is off the trees, as very much less liquid is required, and the spraying much more expeditiously and thoroughly done. While the effect of this spraying can not be determined for some time, this office feels sure that with subsequent application of the solution satisfactory results will be obtained.

The following table shows the extent of spraying with lime sulphur for the scale insect:

Obscure scale, oaks, pin	133
Eriococcus quercus scale, oaks, pin	90
Elm-tree scale, elms	229
Total	452

Unit cost of spraying with lime sulphur for scale insects (labor and materials), \$0.14.

In addition to the above treatment, the following small trees were treated with kerosene emulsion for the destruction of the obscure scale, the same being applied with brushes.

Oaks:	
Red	546
Pin	1,518
Total	2,064

Unit cost of applying kerosene emulsion with brushes (labor and materials), \$0.037.

Total number of trees sprayed during the year.....	28,773
Total number of trees treated for insects by applying with brushes.....	2,064

In addition to the above treatment for insects the egg masses were burned from the trees in the northeast section; also a great many affected branches were clipped off.

The excellent results obtained in the work of spraying the street trees of Washington may be attributed to the effective solutions used and the efficiency of the equipment and men engaged on that work.

CEMENTING.

During the first half of the fiscal year this office gave attention to the cementing of cavities in the trunks and limbs of trees, but the last half of the year this important work had to be discontinued because of the lack of funds and other more important work, especially the spraying of trees throughout the city.

This office, however, realizes that this is a very important branch of work. Because of the treatment rendered, the life of a great many trees are prolonged, and if allowed to stand without any attention, in a short time would be in such a decayed condition that their removal would become a matter of necessity.

The following table gives the number and kinds of trees cemented:

Elm.....	55
Linden.....	5
Maple, Norway.....	1
Sycamore.....	10
Total.....	71
Cost of labor.....	\$170.38
Cost of materials.....	31.63
Total.....	202.01

Unit cost of cementing (labor and materials), \$2.845.

CULTIVATING.

The usual amount of cultivation of young trees was performed during the year. This work is absolutely necessary to insure good growth in young specimens, allowing them to derive the fullest benefits from rainfall.

Too much stress can not be laid upon the importance of cultivation, the full value of which is not generally appreciated. This cultivation is not only beneficial to the young trees, but also destroys a rank growth of weeds that would otherwise spring up around them, and the same would be unsightly. The keeping of the soil around trees cultivated and free from weeds is one of the most important aids to their growth. The keeping of the soil loose allows air to reach the roots, renders more available the plant food the soil contains, and also prevents the rapid evaporation of moisture.

MOWING.

Many uninclosed public parkings were mowed during the year, the necessity being recognized to rid the city of as many weeds as possible. Attention was also given to the maintenance and mowing of grass in front of the District Building, Union Station, Center Market, Ashmead Place, public-convenience station at Seventh Street and Pennsylvania Avenue NW., the parking around Washington Circle, Seventh and Louisiana Avenue NW., the slope at Twenty-second and Decatur Streets NW., and the park areas at Eleventh Street and Massachusetts Avenue NW.

In addition to the care of the above parkings, I would respectfully invite attention to the improvement of the central islands of the Union Station Plaza, which were improved this spring by the removal of the crushed stone and the filling in of same with fine soil, seeding, and sodding; also the improvement at the Quarry Road entrance to Zoo Park.

TREE BOXES REMOVED.

During the fiscal year about 1,200 old tree boxes were removed, as the trees were large enough to do without their support, and in some instances they were in such dilapidated condition that they gave the street an unsightly appearance.

REGULATION OF TERRACES.

The regulation of terraces throughout the city is proceeding satisfactorily, and in the recently built-up sections of the city the uniformity in their heights presents a pleasing appearance. Six hundred and eighty-seven applications were received during the year, and in determining action thereon approximately 500 inspections were made. A majority of the applications received are for the outlying districts and are widely scattered. If the office was equipped with an automobile for these and other inspections, much valuable time would be saved, the office would cease to be a subject of criticism, and the efficiency of the service would be much improved.

A brief summary of the work performed by the office is as follows:

Comparative statement.

	1913	1914
Writing and execution of inspections.....	597	599
Additional terrace inspections.....	550	500
Issuance and execution of work orders.....	731	683
Locations visited in executing same.....	2,892	3,192
Official files acted on.....	502	552
Writing of indorsements thereon.....	750	786
Requests to the surface division for paving, etc.....	31	28
Pay rolls and special vouchers forwarded.....	59	68
Requisitions for supplies, repairs, etc.....	125	121
Transfer of appropriation vouchers.....	3	17
Supply vouchers approved, recorded, etc.....	227	239
Superintendent's recommendations originating here.....	95	89
Gas reports forwarded.....	19	15
Locations thereon.....	100	81
Letters mailed to private individuals.....	321	514
Car tickets and stamp reports forwarded.....	24	3
Replies to communications by post card.....	60	110
Preparation and submission of property returns.....	4	4
Coping permits issued.....	61	173

¹ This office assumed the duty of issuing permits on Apr. 17, 1913, when the permit clerk was relieved of the work.

I would respectfully invite attention to the increase in the amount of clerical work the office was called upon to perform during the past fiscal year.

SUMMARY.

Trees in streets, parkings, sidewalks, school yards, and playgrounds at the close of fiscal year 1913.....	102,559
Trees removed during the fiscal year 1914..... ¹	2,503
Trees planted during the fiscal year 1914.....	2,287
Net decrease during 1914.....	216
Trees in streets, parkings, sidewalks, school grounds, and playgrounds at the close of the fiscal year 1914.....	102,343
Curb trees on streets at close of fiscal year 1913.....	101,915
Net decrease of curb trees during the fiscal year 1914.....	3
Curb trees on streets at close of fiscal year 1914.....	101,912
Mileage of trees at close of fiscal year 1913..... ²	579.04
No change in the mileage of trees, fiscal year 1914.....	
Mileage of tree-planted streets, close of 1913..... ²	289.52
No change in the mileage of tree-planted streets, close of 1914.....	

¹ In addition to the number removed above, 11 were removed from alleys, roadways, and private property, but did not diminish number included in official count.

² Mileage is figured on the basis of 352 trees per mile.

EXPENDITURES.

[Streets, District of Columbia, 1914, parking commission.]

Labor:

Clerical and inspection work	\$1, 886. 01
Military duty with militia	10. 00
Storm damage	8, 124. 10
Cultivating young trees	1, 194. 04
Improvement, care, and mowing of parkings	1, 329. 59
Miscellaneous repairs to boxes, etc	811. 52
Maintenance of nurseries and shops (making 3,000 boxes)	3, 046. 57
Removing dead, decayed, and dangerous trees	2, 654. 39
Trimming street trees	3, 621. 44
Planting trees (including lifting trees in nursery and digging tree holes)	5, 032. 59
Watering recently planted trees	147. 50
Cementing cavities, treating wounds, tree surgery	170. 38
Maintenance of yard (including shoeing horses, repairs to wagons, repairs to tools and the sharpening of same, etc)	2, 034. 99
Extermination of insects—	
Clipping off caterpillar nests	14. 50
Applying kerosene emulsion	75. 77
Burning egg masses of the tussock moth	83. 38
Spraying with lime sulphur	23. 56
Spraying with arsenate of lead	905. 39
Hauling wood for the asphalt plant	5. 25
Cleaning snow from the streets	33. 25
Filling low tree spaces	49. 31
Removing old tree boxes	76. 06
Labor Day payments to laborers	119. 00
Total	31, 448. 59

Materials, supplies, miscellaneous repairs, etc.:

Buggy and wagon findings and repairs	351. 49
Electric current	44. 10
Fertilizer and grass seed	143. 07
Forage	2, 736. 00
Stationery, printing, and office supplies	152. 84
Leather straps	548. 75
Lumber for tree boxes	3, 340. 79
Lumber, miscellaneous purposes	58. 73
Wire, bolts, tin, nails, screws, etc	133. 71
Paints, oils, and glass	103. 23
Rope, twine, etc	127. 71
Soil	218. 58
Stable and blacksmith supplies	50. 04
Tools and agricultural implements	504. 68
Telephone calls	. 55
Car tickets	10. 00
Fuel	71. 04
Drugs	1. 34
Cement	19. 65
Roofing felt	2. 16
Pine tar	1. 20
Auto-truck accessories, repairs, etc	264. 49
Gasoline	260. 62
Iron, steel, horseshoes, and pads	200. 77
Spraying-machine accessories, etc	87. 25
Arsenate of lead	1, 178. 00
Lime sulphur	47. 00
Seedlings purchased (Norway and sugar maple)	42. 50
Sundries	14. 63
Total	10, 714. 92

Charges against appropriation:

Material for Climax Street hydrant.....	\$5.46
Repairs to auto truck.....	289.64
Repairs to spraying machine.....	12.79
Repairs to stables and sheds.....	220.50
Paving tree spaces.....	430.71
Repairs to service pipe.....	1.75

Total.....	960.85
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By appropriation, fiscal year 1914.....	42,500.00
By repayment, fiscal year 1914.....	651.55

Total.....	43,151.55
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Labor.....	31,448.59
Materials.....	10,714.92
Charges against appropriation.....	960.85
To balance appropriation unexpended.....	27.19

43,151.55

Expenditures from miscellaneous appropriations.

[Exclusive of parking commission.]

	Direct charge.	Through repayment.
Miscellaneous trust-fund deposits.....	\$975.06	\$334.37
Electrical department, District of Columbia, 1914, lighting.....	133.71	
Public schools, District of Columbia, 1914, repairs to buildings, etc.....	11.63	
Construction of suburban roads and streets, District of Columbia, 1914, Illinois Avenue and Kennedy Street.....	27.82	
Quarry Road entrance to Zoo Park.....	1,758.57	
Elimination of grade crossings, District of Columbia, improvement of Plaza.....	1,715.60	90.82
Improvement and repairs, District of Columbia, 1914:		
Assessment and permit work.....	1,790.25	72.50
Sidewalks and curbs.....	23.88	
Repairs to streets.....	28.49	9.75
Grading streets, alleys, and roads.....	37.56	
Water department, District of Columbia, 1914, high service.....		32.36
Maintenance, Municipal Building, District of Columbia, 1914.....		8.00
Streets, District of Columbia, 1914, cleaning, etc.....		61.75
Unpaid labor returned to appropriation.....		22.00
Total.....	6,502.60	651.55

Sums expended during the year for employment of per diem employees, paid from appropriation "streets, District of Columbia, 1914, parking commission."

1 copyist, 26 days, at \$3.50.....	\$91.00
1 copyist, 281 days, at \$3.25.....	913.25
1 copyist, 113 days, at \$3.....	339.00
1 copyist, 173 days, at \$2.50.....	432.50

Total.....	1,775.75
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Sums expended during the year for the purchase and maintenance of horses, carts, and wagons, together with amounts paid for single and double wagons and plow-team hire.

[These items included in material list.]

Horses, forage, wagons, and miscellaneous equipment and repairs-----	\$3,338.30
Single wagon hire, 864½ days, at \$2.25 per day-----	\$1,944.57
Double wagon hire, 1,316 days, at \$4 per day-----	5,264.00
3-horse plow team, 15½ days, at \$6 per day-----	94.50
	<hr/>
	7,303.07
	<hr/>
	10,641.37

Respectfully submitted.

T. LANHAM,
Superintendent of Trees and Parkings.

Capt. MARK BROOKE,
*Corps of Engineers, United States Army,
Assistant to the Engineer Commissioner, District of Columbia.*

REPORT OF THE SUPERINTENDENT OF THE WATER DEPARTMENT.

WASHINGTON, September 16, 1914.

SIR: I submit the following report of operations of the water department for the fiscal year ending June 30, 1914:

The most notable result of our year's work is a still further decrease in the consumption of water, not only in per capita, but in total mean daily rate. The changes in these rates since 1896 are shown clearly on the accompanying diagram. Radical measures to curtail waste were taken in 1905, when the mean daily rate had reached 69,000,000 gallons and the per capita about 227 gallons. These measures, as set forth in detail in preceding reports, consisted in the extensive installation of meters, systematic underground surveys to locate and remedy leaks, and careful house inspection.

The great need of such steps is evident when it is remembered that the safe mean rate of flow in the only conduit supplying the city is about 65,000,000 gallons daily. This mean rate was exceeded in 1905, 1906, and 1907, and was reached in 1908. Up to 1895 it was increasing rapidly.

Since 1905 there has been an almost continuous decrease in the amount of water used by the city, until during the past fiscal year the mean daily rate was about 54,000,000 gallons, and the per capita rate 152 gallons.

The decrease in per capita rate since 1905—227 to 152, or 75 gallons—is 33 per cent. Assuming that the per capita can be finally reduced to 130 gallons—a further reduction of 22 gallons, or 14½ per cent—and that the population increases at about the same rate as in the past, the mean daily consumption would equal the safe mean capacity of the conduit in 1930, when the population of the District would be about 500,000.

Past experience seems to indicate that a per capita of not more than 130 may be reached by a vigorous continuance of waste-preventive measures. Steps certainly should be taken to insure the availability of an additional supply not later than 1930. The importance of this can scarcely be exaggerated.

A detailed statement of the financial transactions of the department will be found in the report of Division F following. This shows that from all sources there was available for the needs of the department during the year the sum of \$828,396.69. The cash expenditures for the year amounted to \$794,952.16 and outstanding net liabilities on June 30, 1914, to \$32,497.90, leaving a working balance of \$946.63.

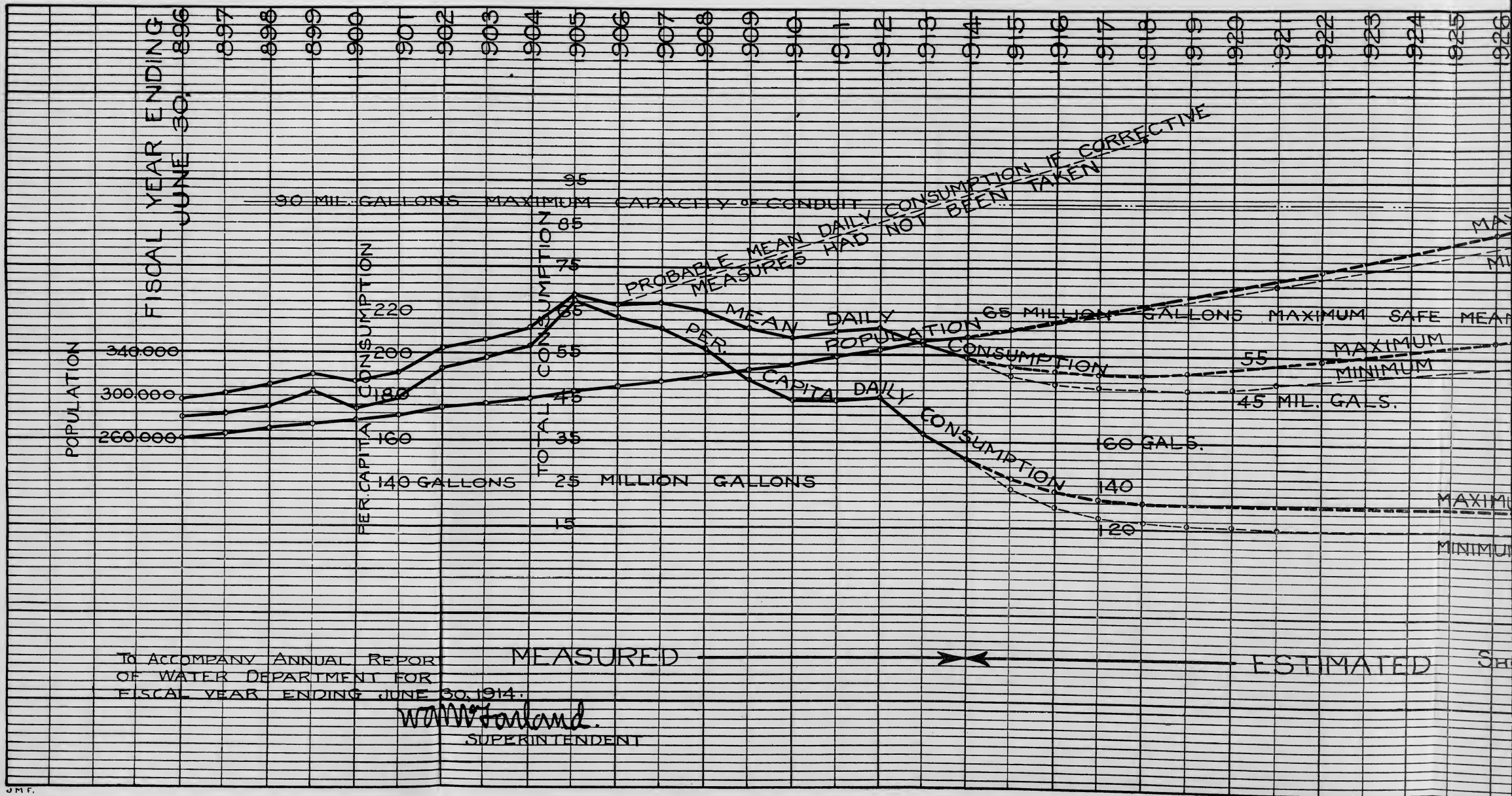
The total cost of work done by the department during the year, as distinguished from the cash expenditures (the difference being due to increased material in stores) was \$766,354.06, of which about 52 per cent was for new work in extension of plant, 27 per cent for operation, and the balance for repairs and replacements.

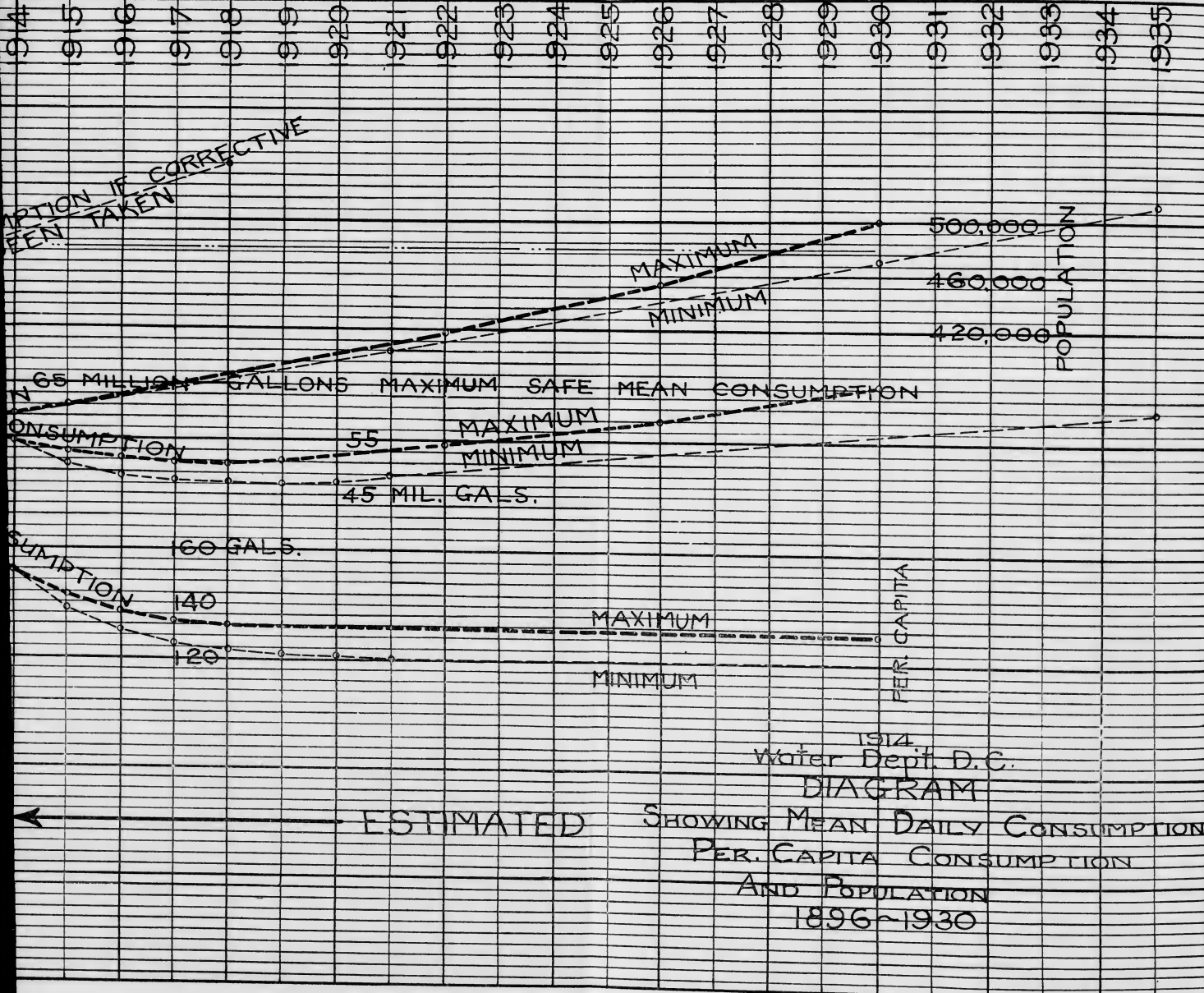
The total length of mains of all sizes laid during the year was 98,460 feet, or 18.6 miles, at a cost of \$191,303.87. This brings the total length of mains in the distribution system up to 3,120,406 feet, or 591 miles.

The next highest single item of cost was the installation of meters, \$103,610.20.

During the year there were installed 8,555 meters, bringing the total number in use on June 30 up to 42,161.

The total number of services in use is 66,914, of which 24,753, or 37 per cent, remain unmetered; assuming 2,000 additional services and the installation of





8,000 meters per year, the metering of the city will be completed in the summer of 1918. The department hopes to do better than this.

The net result of the year's work by Division B—underground surveys for the detection of leaks and waste—was the stopping of underground waste aggregating 2,552,000 gallons a day. Particular attention is invited to the detailed report by Mr. Lanham, in charge of this work.

During the year our systems of storekeeping, property accountability, and cost keeping were brought up to date, and are now believed to be highly efficient. All portable property is cared for in well-equipped storerooms and yards, perpetual inventories showing not only quantity balance, but money value, are kept constantly up to date, and the personal responsibility of employees is complete. A daily statement is submitted showing the value of tools and material on hand at the close of business each day. These values at the close of the year were, for tools and equipment, \$485,556.01; miscellaneous supplies, \$162,476.32, or a total accountability of \$648,032.33. Attention is invited to the report of Mr. Riggs, in charge of stores and accounts, Division F, following.

An important event of the year was the completion and putting into service of the Anacostia pumping station, and consequent extension of water service to the higher land beyond the Eastern Branch and an increase of pressures in Congress Heights and vicinity. There are four pumps in this station, all of the triplex, single acting, outside-packed-plunger type, two of 1,200 gallons per minute capacity, each supplying the first high-service area, between 70 and 170 feet elevation, and two of 600 gallons per minute each capacity for the second high service, between elevations 170 and 280 feet. The pumps are driven by two 50-horsepower internal-combustion oil engines, so arranged that any pump may be driven by either engine. Fuel oil in tank-car lots is bought at 5.93 cents per gallon. Up to the present time the mean total pumpage by the station has been 316,000 gallons daily. Three water towers, each with a total capacity of 140,000 gallons, are maintained in connection with this station.

The laying of new mains and appurtenances and nearly all outside construction work was done by Division D, under the direct supervision of Asst. Engineer J. S. Garland. Probably the most important single project completed was a reinforcing trunk main laid in the low-service area north and east of Capitol Hill. This consisted of about 4,800 feet of 30-inch and 4,700 feet of 24-inch main, and completed a loop much needed to insure uninterrupted service in the outlying portions of the gravity service and throughout Anacostia.

Another project of importance completed during the year was the extension of water service to the Home for the Aged and Infirm at Blue Plains. This necessitated the laying of 7,600 feet of 8-inch main, reaching practically to the southernmost point of the District, and furnished much-needed relief.

Other activities of this division included surveys for and the laying of mains and appurtenances as enumerated in the accompanying table; the hauling of over 7,000 tons of cast-iron pipe and a very large amount of miscellaneous freight from the railroad terminals; the inspecting, cleaning, and testing of 8,130 street valves in place; the placing of 1,890 cast-iron number plates on valve casings; 45,571 fire-hydrant inspections; the establishment and isolation of the first and second high-service areas in Anacostia; the cleaning of Brightwood Reservoir three times and of Reno Reservoir four times; the installation of a second 48-inch Venturi meter on Fourth Street; the laying of a 4-inch wrought-iron pipe 2,853 feet long for the conveyance of fuel oil from the railroad siding to the Anacostia pumping station; supervision of erection of 8-foot woven-wire fences around department property at the District and Anacostia pumping stations and the tower yard at Tenth Place and Alabama Avenue SE.; supervision of leak repair gangs, which handled 1,784 leaks during the year; and a very large amount of miscellaneous work as set forth in the division and sub-division reports on file. The work of Division D, under Asst. Engineer Garland, is outlined above. Following are the detailed reports of work done by Divisions B, C, E, F, and G, as submitted by the respective heads of those divisions.

I wish to record my hearty appreciation of the excellent work done during the year by the employees of this department, and especially to the several heads of divisions and subdivisions.

The affairs of the department are in most excellent condition, chiefly due to the earnest effort and skillful work of these men.

W. A. McFARLAND,

Superintendent Water Department, District of Columbia.

Capt. R. G. POWELL,

Corps of Engineers, United States Army,

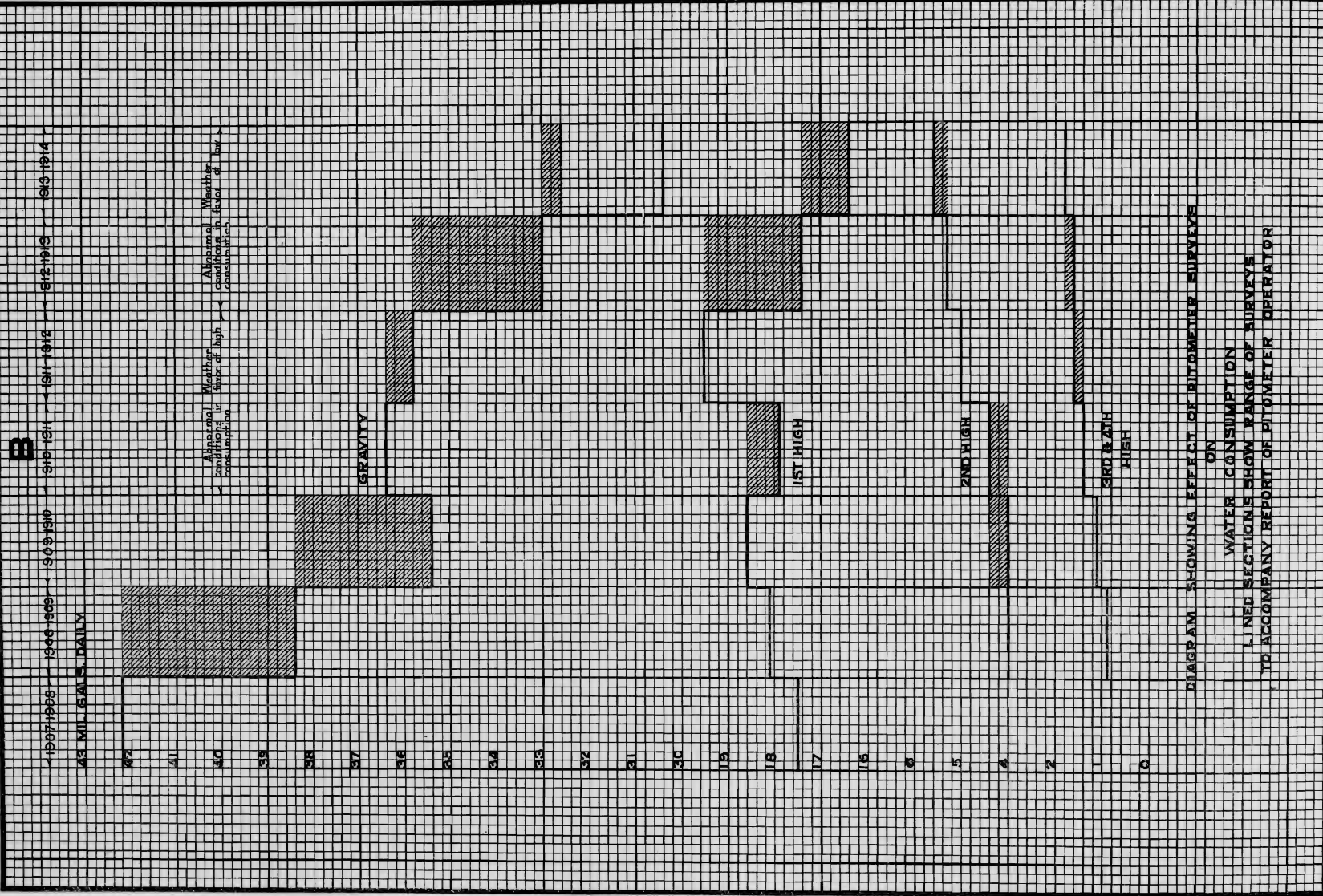
Assistant to Engineer Commissioner, District of Columbia.

DIVISION B.—*Report of pitometer surveys for the detection of waste.*

SIR: Two million five hundred and fifty-two thousand gallons per day, underground leakage, detected and prevented, represents the results of the pitometer surveys for the fiscal year 1913-14, the eighth year of the pitometer service in the District of Columbia. This leakage was due to the usual sources, and was found scattered throughout the first high service, which was surveyed completely, excepting a small section east of the Anacostia River; two districts of the gravity service and about one-half of the second high service. A total of 452 individual leaks was found, giving an average of 5,600 gallons per day. This average leakage is much smaller than that found upon the first surveys in 1907 (see Statement A), the difference being due to several natural causes. These causes, in the order of importance, are the elimination of large leaks, which had probably been running for years before the inauguration of the pitometer service, the repeated surveys checking leaks practically at the time of their starting, and the reduction in the number of special investigations in the Federal buildings, etc., where large leaks and waste were previously found.

Throughout the year the increasing scarcity of leaks and waste was very noticeable, and the extremely low rates of flow detected in the various sections of mains introduced entirely new conditions to be overcome in the successful prosecution of the work. Heretofore, the flows have nearly always been of sufficiently large size to permit effective use of the aquaphone in the daytime, and the neglect of slightly imperfect isolations, but now, because of the traffic noises and the smallness of the flows under investigation, most of the aquaphone inspection has to be done at night, and as old valves and stopcocks seldom give perfect shut-offs, misleading indications are frequent, causing delay and sometimes failure to properly account for suspicious flows. Also, in addition to these troubles, there is that of the continuous fluctuation in the rate of flow in the mains due to pressure changes. The effect of this can readily be appreciated when it is known that the change in the rate of flow, due to this cause, is frequently several times as great as the effect produced by the flows under investigation. The result of this state of affairs is that the ability of the operators is being taxed to a greater extent each year, and several, whose services were previously satisfactory, have been dismissed because of their inability to produce results under the new conditions. The personal element enters into the work of this division to a very great extent, but, due to the use of recording instruments and complete records, it has been reduced considerably during the last few years. Experiments are now being made to increase the sensitiveness of the pitometers, so that they may be used for reading small flows direct instead of by differences, and with pressure regulating valves on fire hydrants to control the flow and reduce fluctuation during tests. Any success along these lines will be of great assistance in making pitometer surveys an exact science.

For several years past it has been the practice, in laying out territory for the field men, to work the services in such order as to have available figures for comparison in both surveyed and unsurveyed territories. This has enabled us to show graphically conclusive evidence of results of the pitometer surveys. This practice was continued during the past year, and attention is invited to the chart B, submitted herewith. Examination of the diagram of the consumption in the gravity service will show that there has been a steady and remarkable decline in the water consumption of that service, the six years since July 1, 1908, showing a drop of 11,000,000 gallons in the mean daily rate. In that period the only year that showed any increase over the previous year was 1910-11, when no pitometer parties were working in the gravity service. The weather of that year was such as to produce heavier consumption than normally, but should have had no more effect on the water consumption than the weather of 1911-12, which was also abnormal in the same direction. Nevertheless, the activity of the pitometer service in 1911-12 and in the successive years since made its impression upon the consumption, being aided, probably, to a considerable extent by the installation of meters, and during the last two years by abnormal weather in favor of low consumption. Since October 1, 1913, the consumption of the gravity service has been determined by Venturi meters on Fourth Street NW., instead of by figures from the filtration plant. These latter were undoubtedly too high, as no allowances were made for water used and spilled at that plant. The drop in the gravity service for last year, therefore, is due to some extent to that change in the method of determination. The dotted line on the diagram at this point is the estimated rate which the old method would have shown, and is the proper figure for use in gauging the effect



of the surveys. The drop expected in the gravity service was less than that expected in the first high service, since only a portion was surveyed; hence the reduction indicated by this corrected figure more nearly conforms to the effect anticipated.

In the first high-service consumption there was a steady increase each year until 1910-11, when an abrupt drop occurred coincident with the pitometer survey of that territory. This decrease happened at a time when the weather conditions were such as to produce an opposite effect, so that the drop in consumption was significant. The following year, however, when the weather was of the same general character and no surveys were made in this service, the sudden increase of over 1,000,000 gallons in the daily rate gives a fair idea of what might happen with adverse climatic conditions and no corrective measures. The decline in 1912-13 and in 1913-14 simply confirms the obvious conclusions of the previous years, showing the joint effect of corrective measures and favorable weather conditions.

Effective work is much more difficult in the second and third high services than in the lower services, because of the low velocities in the mains. This condition is due largely to the fact that all mains in these sections are of recent installation, when the practice called for larger sized mains than formerly. However, examination of the diagram for these services shows that the only years in which there was no increase in the consumption were when pitometer surveys were being made in the service affected. It will be noticed that there was an increase in the consumption in several years in spite of the pitometer surveys made during those years. This can be attributed to the fact that very little leakage was found in the portions surveyed and could not be expected to influence the total rate noticeably. These being metered services, the moral effect of the investigations is also practically zero. Determined efforts are being made to locate the causes of all night consumption in the second high service, and the effect of this will be seen on the consumption for next year. The third high service also will probably receive considerable attention during the coming year, because of the rapid rate of increase in its consumption. It is to be remembered, however, that practically all of the city's growth is occurring within the limits of the second and third high services, and we expect only to hold a reasonable per capita consumption while the total gradually increases with the population. The work in these services is the most interesting and most important at the present time, because the future operations of this division will be based almost entirely upon the results of what may be called experiments in the best methods of handling the metered residential territory. About one-half of the second high service was surveyed during the year, but other than giving the material results of the work, no further mention will be made in this report. However, a special report will be submitted upon the completion of the work in that section, giving in full detail all information concerning both present conditions and future possibilities.

The inspection of fixtures in all unmetered houses was continued throughout the year and resulted in our turning over to the water registrar's office about 1,600 cases where leaks were found. This represents 9.4 per cent of the total number of houses inspected and indicates that very satisfactory results are coming from this work, as the lowest percentage during any previous year was 14.1 per cent. Statement C shows these figures for six years back and gives an excellent idea of the steady and substantial progress made in this work. Of course it is only a question of a few years before the complete metering of all houses will eliminate this branch of our work, but in the meantime the saving of water is undoubtedly being felt.

As a source of underground waste, iron services have each year been the leaders, and last year was no exception. A total of 166 iron service pipes were found discharging through porous soil 924,000 gallons of water each day. Joints on mains follow as a close second, with 93 cases, wasting 596,700 gallons per day. The split lead and pewter services and broken wiped joints on lead services and on lead connection to iron services are also blamable for a very heavy waste of water. A comparison of the relative importance of the various sources of leaks found each year since 1907 is embodied in statement D, herewith.

The largest individual leak found was a break on a 4-inch main, discharging 57,000 gallons per day. Considerable difficulty was experienced in locating this leak because of the fact that it was in a section of main that was not recorded on our plats. This case therefore not only shows the direct results of our work in saving water but the indirect results in the weeding out of errors in the maps of the department. Hundreds of feet of old unrecorded mains have been located

since this division started work, in 1906, and during the past year approximately 200 feet of unrecorded 4-inch main was added to the total previously found.

While in the majority of cases where the pitometer tests indicate trouble flows can be heard or some other indication found to help locate the leak, during the past year a number of cases were handled where none of the usual methods were applicable, because of the absence of these customary indications. The leak of 57,000 gallons per day mentioned above was an example of such a case. This being on an unrecorded main, it was obviously impracticable to sink test holes at random, and the leak was found only by the application of the process of elimination carried to a point of actual elimination of all known connections.

Special investigations for the detection and stoppage of water waste were made at the House of Representatives Office Building and the sewerage pumping station. These investigations were reported in detail in special reports dated June 30, 1914, and August 25, 1913, respectively. They resulted in the throttling of several small flows at the House Office Building, saving approximately 28,000 gallons per day, and the metering of all connections to condensers in the Sewerage Pumping Station, preventing careless waste of over 300,000 gallons per day. Under the head of special work should also be included a series of careful tests made to determine the accuracy of the pitometer as a means of determining pump slippage, and the measurement of mean daily and 24-hour rates of consumption at the Naval School of Hygiene, Naval Laboratory, Naval Hospital, and the National Museum, for the United States aqueduct officials to assist in the metering of these institutions. The work on slip indicators was covered fully in report of February 10, 1914, and the measurements of Federal buildings were submitted direct to the Aqueduct officials, copy of figures being submitted herewith in statement "E." This statement also includes a comparison of the quantities of water consumed in all metered Federal buildings before and after the installation of the meters. The averages since the meters were installed are based upon the weekly meter readings, and are perfectly fair figures, but pitometer readings previous to the meter installation were necessarily of very short duration, and, therefore, subject to corrections allowances for season changes, etc. Making due allowance for these changes, however, the indications are that the moral effect of the meter installation has been good, resulting in reduced water consumption in the majority of cases.

Tests of trunk mains embraced most of the important lines in the gravity, first and third high services, and several in the second high service. There were 37 individual tests made on trunk mains during the year, flows totaling 299,500 gallons per day being detected. Investigation as to the source of flow in each case resulted in the detection of either underground leakage or flow inside of premises, with the exception of three instances, where no trace could be found of the cause of the flow. In these cases retests were made and showed zero. For further information upon condition of trunk mains, your attention is respectfully invited to statement "F" herewith.¹

Because of the changes which are constantly being made in the distribution system, both by extension of mains and alteration of water-service areas, it was found necessary during the year to install nine new permanent pitometer connections in order that all mains could be properly tested. This brings the total number now in service to 316 and gives us excellent facilities for quick and efficient work. Repairs to connections were made in eight cases, where old connections were inoperative or leaking. Repairs to connection in the old 8-inch standpipes were always accompanied by replacement of the standpipe with a valve casing.

Since November 24, 1913, no regular photographer was employed by this division, work previously performed by him being turned over to one of the clerks of this office. There was practically no work done during the year which required the services of an expert, so that by eliminating this position substantial economy was practiced. Statement "G," submitted herewith, giving results of the year's work, includes a summary showing that the photographic work was comprised principally of developing pitometer records and blue printing for this and other divisions of the department.

As was mentioned above, the greatest quantity of work was performed in the first high service, and the conditions there found indicate satisfactory progress toward the reduction of the per capita and night consumption to a minimum. The average per capita for the entire first high service, based upon the station

¹ Not transmitted.

figure of 16,400,000 gallons mean daily consumption and our latest population count, is 138 gallons daily. The average minimum night rate for the year was 62.3 per cent of the mean daily rate, based entirely upon figures taken from the pumping station log and engineer's reports.

The measurement of the total consumption of all of the first high districts were made on 48 and 36 inch mains, where great care was necessary to read the very low velocities prevailing at night. The inaccuracy of the photographic recorders on velocities lower than one-half foot per second is well known, but until the past year no other instrument was available for this work. The introduction of a new type of recorder then gave us an opportunity to make accurate measurement of flows as low as one-third of a foot per second. This type of instrument was used in measuring all districts where the flows were below the limit of the photographic recorders, and as a result the night rates in these districts show a lower percentage than at any time previously. (See statement "H.") It is not believed that this abrupt change occurred during the past year, as the statement indicates, but rather that it had been gradually taking place, and failed to register upon the photographic charts. That our latest figures are the more accurate is indicated by their checking very closely with the average taken from pump displacement computations. Districts of the first high service worked during the year were "G," "I," "K," and "L," and statement "I," attached hereto, gives the mean daily and night rates of consumption and analyses of the night flow. Study of this statement will show that in most cases practically all of the flow detected on the subdivision tests was accounted for by leakage, flow within buildings, or legitimate consumption of horse fountains, sewer flush basins, etc. The discrepancy between the night rates of consumption found upon the preliminary measurement and upon the totaling of the various night subdivision tests is as yet only partially understood, but closer study will be given the situation upon future surveys, and it is hoped that valuable knowledge will be secured. When examining this statement, attention is invited to the somewhat heavy night flow into metered premises. As the first high service supplies an almost purely residential section, the use of water through meters between midnight and dawn gives an insight into what may be expected when the city is entirely metered. Surveys of gravity districts "E" and "F" show the same general results as those in the first high service. Heavy flow, as yet not located in these districts, remains to be investigated and gives hope of substantial results accompanying future work. Use of water by Federal buildings is excessive in the gravity territory and invites investigation. Details of work in districts "E" and "F" are embodied in statement "I," herewith.

Surveys in the second high service are progressing slowly and satisfactorily, but as district measurements could not be made because of low flow in feeder mains, the real condition of this territory will not be known until work is complete and figures totaled for comparison with mean daily supply delivered to the entire area. Reference to statement "I" gives figures to date on districts "M," "N," and "O" in this service.

The program of work for the ensuing year includes, in addition to a complete survey of the gravity service, completion of survey of second high service and preliminary surveys of the third high service, a more thorough study of the use of water by Federal buildings, with a view toward making use of condensing water now running into sewers. Opportunities for saving water also present themselves in closing suction valves on idle pumps at the District pumping station and securing, if possible, the closure of all display fountains between the hours of 12 p. m. and 7 a. m. during the months they are in operation. Some action should also be taken toward giving municipal departments an incentive to restrict water waste. Several of these have been found guilty of wasting water to a serious degree, and some check should be placed upon them. The effect of installing meters is good, even though no charge is made for the water registered, and all buildings under the control of the commissioners should be metered. It does not seem that present conditions call for the payment for all water used by municipal institutions, however, but when water is being used for power purposes, resulting in decided economy to those institutions at the expense of the water department sometimes out of all proportion to the service rendered, it would certainly be an equitable arrangement to charge for the water so used.

Very respectfully submitted.

PAUL LANHAM,
Pitometer Operator.

The SUPERINTENDENT WATER DEPARTMENT, District of Columbia.

SUPPLEMENTS.

- A. Underground leakage, 1907-1914, showing average per leak.
 B. Chart, effect of pitometer surveys.
 C. Results of house inspection, 1907-1914.
 D. Underground leakage, 1907-1914, showing sources and quantities.
 E. Comparative consumption of Government buildings before and after metering.
 F. Trunk-main tests, 1913-14.¹
 G. Year's results, 1913-14.
 H. Measurements of permanent districts, gravity service, first high service, and second high service.
 I. Surveys of permanent districts, 1913-14, gravity service, first high service, and second high service.

A.—Underground leakage, 1907-1914, showing number, quantity, and average.

Year.	Number.	Quantity per day.	Average per leak per day.
		Gallons.	Gallons.
1907-8.....	271	5,604,400	20,700
1908-9.....	832	9,560,600	11,500
1909-10.....	532	6,364,200	12,000
1910-11.....	624	6,921,900	11,100
1911-12.....	813	5,115,300	6,300
1912-13.....	651	4,195,100	6,400
1913-14.....	452	2,552,800	5,600
Seven years.....	4,175	40,314,300	9,700

C.—Results, house inspection, 1907-1914.

Year.	Houses inspected.	Houses with defective fixtures.	Percentage.
1907-8.....			
1908-9.....	27,758	4,621	16.6
1909-10.....	21,642	3,305	15.2
1910-11.....	21,547	3,262	15.1
1911-12.....	31,289	4,943	15.7
1912-13.....	26,397	3,725	14.1
1913-14.....	17,039	1,603	9.4

D.—Sources and daily quantities of underground leakage, 1907-1914.

Classes.	1907-8	1908-9	1909-10	1910-11	1911-12	1912-13	1913-14
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.
Abandoned taps and services.....			355,300	173,600	174,200	180,900	101,700
Iron services.....	2,729,000		2,438,000	1,508,900	2,329,800	1,988,800	924,000
Lead services.....			1,201,900	1,237,600	976,700	394,000	471,000
Wiped joints.....	327,000		710,100	666,700	438,100	282,300	237,000
Couplings.....		5,214,000	118,700	182,900	123,700	75,600	66,000
Stopcocks.....			84,800	43,300	53,500	32,900	16,900
Street washers.....				42,000	10,400	5,700	500
Joints on mains.....	1,039,900	1,345,600	1,034,200	2,562,500	746,300	962,300	596,800
Broken mains.....	1,200,000	117,000	332,000	15,900	7,000	103,300	62,200
Valves.....	23,500	62,000	89,100	110,900	27,100	13,200	6,800
Blow-offs.....		737,000		176,600	71,300	6,000	
Fire hydrants.....	174,000	45,500		19,700	3,500	115,000	500
Public hydrants.....				84,200	50,200	21,000	12,000
Unclassified.....	111,000	2,039,500		97,600	103,800	15,000	56,500
Total.....	5,604,400	9,560,600	6,364,100	6,921,900	5,115,600	4,196,000	2,552,800

¹ Not transmitted.² No records.

E.—Comparative consumption of Government buildings before and after metering.

Buildings.	Before metering— Photographic record measure- ment (per day).	After meter- ing—Meter reading (per day).
	<i>Gallons.</i>	<i>Gallons.</i>
Naval Hospital, Naval School, Hygienic Laboratory.....	165,600	76,400
Government Printing Office.....	1,523,400	1,751,000
Navy yard.....	1,790,100	618,000
Walter Reed Hospital (Dahlia Street feed only).....	108,000	315,000
Municipal Building.....	61,600	97,900
Congressional Library.....	199,300	160,300
Soldiers' Home (Eagle Gate only).....	215,000	178,000
National Museum.....	¹ 272,600	² 40,700
Freedmen's Hospital.....	99,400	47,700

¹ Old and new buildings.² New building only.*G.—Year's results.*

Service pipes inspected (metered 24,794).....	49,125
Houses inspected.....	17,039
Houses with defective fixtures (9.4 per cent).....	1,603
Number of notices served.....	297
Number of houses cut off.....	31

UNDERGROUND LEAKAGE.

Class.	Number.	Gallons daily.
Abandoned services.....	8	101,700
Iron services.....	166	924,000
Lead services.....	74	471,000
Wiped joints.....	49	237,000
Couplings.....	28	66,900
Stopcocks.....	16	16,900
Street washers.....	1	500
Joints on mains.....	93	596,800
Broken mains.....	2	62,200
Valves.....	4	6,800
Public hydrants.....	1	12,000
Fire hydrants.....	1	500
Unclassified.....	9	56,500
Total.....	452	2,552,800

PHOTOGRAPHIC WORK.

Number of blue prints made for division "E".....	2,805
Number of blue prints made for division "B".....	273
Number of photographic plates exposed.....	77
Number of photographic prints made.....	127
Number of pitometer records developed.....	125

EXPENSES.

Per diem labor and material:	
Operating.....	\$35,307.96
New work.....	3,305.29
Total.....	38,613.25

H.—Measurements of permanent districts, gravity service.

District.	Fiscal year.	Date.	Mean, daily.	Minimum, night.	Ratio.	Per capita, daily.
			<i>Gallons.</i>	<i>Gallons.</i>	<i>Per cent.</i>	<i>Gallons.</i>
A.....	1910-11	May 13-18, 1911.....	8,369,800	6,458,400	77	.....
	1911-12	May 29-June 4, 1912.....	8,478,000	5,904,000	70	.....
	1912-13	Oct. 24-30, 1912.....	9,668,800	6,990,000	72	497
B.....	1909-10	Aug. 20-26, 1909.....	3,372,800	2,458,800	73	258
	1909-10	June 5-11, 1910.....	3,195,000	2,199,600	69	.....
	1910-11	Feb. 24-Mar. 2, 1911.....	3,001,900	1,974,200	66	.....
	1911-12	Apr. 28-May 4, 1912.....	3,826,800	2,900,600	76	289
	1912-13	Mar. 26-Apr. 1, 1913.....	2,606,000	1,848,600	71	197
	1913-14	May 3-9, 1914.....	3,897,000	2,692,000	69	.....
C.....	1909-10	May 18-24, 1910.....	3,637,800	3,097,800	85	167
	1910-11	Mar. 9-15, 1911.....	3,687,600	3,061,800	81	.....
	1911-12	Apr. 28-May 4, 1912.....	3,366,000	2,773,000	82	170
	1912-13	Apr. 4-10, 1913.....	3,877,200	3,233,600	83	188
	1913-14	Apr. 20-26, 1914.....	3,537,000	2,946,600	83	.....
D.....	1910-11	Mar. 19-25, 1911.....	4,335,400	3,120,000	72	.....
	1911-12	Dec. 16-22, 1911.....	3,168,000	2,700,000	85	268
	1912-13	Sept. 12-18, 1912.....	4,608,000	4,140,000	89	.....
	1912-13	Apr. 4-10, 1913.....	4,800,000	3,744,000	78	393
	1913-14	Apr. 30-May 8, 1914.....	4,868,000	3,216,000	74	.....
E.....	1909-10	Sept. 13-19, 1909.....	7,638,000	6,062,400	79	351
	1910-11	July 8-14, 1910.....	7,663,600	5,627,800	73	.....
	1910-11	Mar. 29-Apr. 6, 1911.....	6,379,600	5,155,200	81	.....
	1911-12	Apr. 19-25, 1912.....	6,148,800	4,156,800	68	282
	1912-13	Aug. 21-27, 1912.....	7,747,200	6,235,000	80	.....
	1912-13	Apr. 18-24, 1913.....	6,075,000	5,035,000	83	.....
	1913-14	Feb. 21-27, 1914.....	6,530,400	5,777,000	88	313
F.....	1911-12	Dec. 16-22, 1911.....	6,860,000	4,428,000	65	191
	1912-13	Sept. 21-27, 1912.....	4,180,800	3,320,000	79	119
	1913-14	July 3-10, 1914.....	5,842,000	3,306,000	57	.....
G.....	1910-11	Aug. 6-12, 1910.....	4,272,000	3,216,000	75	143
	1911-12	Feb. 26-Mar. 2, 1912.....	5,472,000	4,560,000	83	171
	1912-13	July 8-15, 1912.....	5,256,000	3,696,000	70	.....
	1912-13	June 5-11, 1913.....	4,416,000	3,384,000	77	.....
	1913-14	Aug. 29-Sept. 5, 1913.....	5,220,000	3,072,000	59	161
	1913-14	Mar. 8-16, 1914.....	3,936,000	2,640,000	67	.....
H.....	1912-13	Nov. 23-24, 1912.....	434,300	343,000	79	181
I.....	1910-11	Nov. 19-25, 1910.....	3,548,600	3,240,000	91	187
	1911-12	Mar. 28-Apr. 5, 1912.....	3,846,000	3,168,000	82	209
	1912-13	May 8-14, 1913.....	3,975,400	3,161,100	80	.....
	1913-14	Mar. 28-Apr. 3, 1914.....	3,853,700	2,206,300	57	171
K.....	1910-11	Nov. 19-25, 1910.....	3,649,700	2,592,000	71	158
	1911-12	Mar. 28-Apr. 5, 1912.....	3,602,000	2,592,000	72	172
	1912-13	May 8-14, 1913.....	3,896,600	2,454,900	63	126
	1913-14	Mar. 28-Apr. 3, 1914.....	3,310,300	1,609,700	49	.....
L.....	1910-11	Dec. 13-19, 1910.....	8,104,900	7,168,000	88	225
	1911-12	Mar. 15-21, 1912.....	7,344,000	4,392,000	59	209
	1912-13	June 5-11, 1913.....	6,312,000	2,880,000	46	.....
	1913-14	Mar. 8-15, 1914.....	4,476,000	3,432,000	77	.....
M.....	1910-11	Sept. 16-22, 1910.....	1,603,100	1,170,000	73	.....
	1910-11	Apr. 14-21, 1911.....	1,755,600	1,236,000	70	141
N.....	1910-11	June 6-12, 1911.....	568,700	275,900	49	110
O.....	1910-11	June 14-20, 1911.....	939,500	878,200	93	48
P.....	1910-11	June 16-22, 1911.....	388,200	289,500	75	119
Q-R.....	1910-11	June 17-24, 1911.....	632,700	427,600	68	.....

¹ Anacostia gravity service included from this date.

I.—Surveys of permanent pitometer districts.

PITOMETER DISTRICT G, SURVEY NO. 3.

Date of measurement, Aug. 29-Sept. 5, 1913.

Mean daily supply.....gallons..... 5,220,000
 Minimum night rate.....do..... 3,072,000
 Ratio of minimum night rate to mean daily supply.....per cent..... 59
 Subdivision survey:
 Started, July 24, 1913.
 Finished, Dec. 21, 1913.
 Cost.....\$3,639.36

OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

79

Population:

Resident—

Metered	19,046
Unmetered	13,325
Total	32,371

Floating—

Metered	7,339
Unmetered	4,024

Total	11,463
--------------------	---------------

Per capita consumption, computed from resident population..... 161

Buildings:

Dwellings—

Metered	4,001
Unmetered	3,114

Hotels and apartments—

Metered	57
Unmetered	5

Municipal buildings—

Metered	16
Unmetered	1

Federal buildings—

Metered	2
Unmetered	7

Factories—

Metered	2
Unmetered	1

Restaurants—

Metered	21
Unmetered	0

Miscellaneous—

Metered	261
Unmetered	264

Total—

Metered	4,360
Unmetered	3,392

Gallons.

Night flow detected by subdivision, per day..... 2,013,200

Due to inside flow—

Metered	333,300
Unmetered	578,400

Due to underground leakage—

Service pipes	406,700
Joints on mains	14,200

Total underground leakage..... 420,900

Due to Federal buildings and fountains..... 561,500

Due to municipal buildings, fountains, flush basins, horse fountains..... 32,800

Total flow accounted for..... 1,927,500

Total flow unaccounted for..... 85,700

PITOMETER DISTRICT I, SURVEY NO. 3.

Date of measurement, Mar. 28-Apr. 3, 1914.

Mean daily supply..... gallons.. 3,853,700

Minimum night rate..... do..... 2,206,300

Ratio of minimum night rate to mean daily supply..... per cent.. 57

Subdivision survey:

Started, Mar. 1, 1914.

Finished, June 18, 1914.

Cost..... **\$3,408.92**

Population:

Resident—

Metered.....	13,784
Unmetered.....	8,792
Total.....	<u>22,576</u>

Floating—

Metered.....	4,795
Unmetered.....	2,261
Total.....	<u>7,056</u>

Per capita consumption, computed from resident population..... 171

Buildings:

Dwellings—

Metered.....	1,925
Unmetered.....	2,163

Hotels and apartments—

Metered.....	90
Unmetered.....	2

Municipal buildings—

Metered.....	10
Unmetered.....	2

Federal buildings—

Metered.....	7
Unmetered.....	2

Factories—

Metered.....	2
Unmetered.....	0

Restaurants—

Metered.....	15
Unmetered.....	0

Miscellaneous—

Metered.....	259
Unmetered.....	219

Total—

Metered.....	2,308
Unmetered.....	2,388

Gallons.

Night flow detected by subdivision, per day..... 1,249,200

Due to inside flow—

Metered.....	225,800
Unmetered.....	493,600

Due to underground leakage—

Service pipes.....	156,400
Joint on mains.....	93,000
Valves.....	7,500

Total underground leakage..... 256,900

Due to Federal buildings and fountains..... 89,000

Due to municipal buildings, fountains, flush basins, horse fountains..... 34,000

Total flow accounted for..... 1,099,300

Total flow unaccounted for..... 149,900

PITOMETER DISTRICT K, SURVEY NO. 3.

Date of measurement, May 8-14, 1913.

Mean daily supply..... gallons..... 3,896,600

Minimum night rate..... do..... 2,454,900

Ratio of minimum night rate to mean daily supply..... per cent..... 63

Subdivision survey:

Started Dec. 18, 1913.

Finished Apr. 14, 1914.

Cost..... \$2,673.01

Population:

Resident—

Metered	18,305
Unmetered	7,961

Total	26,266
-------------	--------

Floating—

Metered	8,783
Unmetered	1,835

Total	10,618
-------------	--------

Per capita consumption, computed from resident population.....

126

Buildings:

Dwellings—

Metered	2,275
Unmetered	1,638

Hotels and apartments—

Metered	115
Unmetered	8

Municipal buildings—

Metered	10
Unmetered	2

Federal buildings—

Metered	2
Unmetered	2

Factories—

Metered	4
Unmetered	0

Restaurants—

Metered	14
Unmetered	0

Miscellaneous—

Metered	481
Unmetered	345

Total—

Metered	2,901
Unmetered	1,995

Gallons.

Night flow detected by subdivision, per day..... 1,697,800

Due to inside flow—

Metered	563,100
Unmetered	557,800

Due to underground leakage—

Service pipes	222,900
Joints on mains	97,600

Total underground leakage	320,500
---------------------------------	---------

Due to Federal buildings and fountains.....

2,000

Due to municipal buildings, fountains, flush basins, horse fountains

22,100

Total flow accounted for..... 1,465,500

Total flow unaccounted for..... 232,300

PITOMETER DISTRICT L, SURVEY NO. 3.

Date of measurement, Mar. 8-15, 1914.

Mean daily supply..... gallons..... 4,476,000

Minimum night rate..... do..... 3,432,000

Ratio of minimum night rate to mean daily supply..... per cent..... 77

Subdivision survey:

Started, May 28, 1914.

Finished, Aug. 8, 1914.

Cost

\$2,614.85

Population:

Resident—	
Metered	36,350
Unmetered	811
Total	37,161

Floating—	
Metered	4,794
Unmetered	1,209
Total	6,003

Per capita consumption, computed from resident population..... 121

Buildings:

Dwellings—	
Metered	7,243
Unmetered	189
Hotels and apartments—	
Metered	77
Unmetered	0
Municipal buildings—	
Metered	21
Unmetered	1
Federal buildings—	
Metered	1
Unmetered	0
Factories—	
Metered	4
Unmetered	0
Restaurants—	
Metered	21
Unmetered	0
Miscellaneous—	
Metered	777
Unmetered	72
Total—	
Metered	8,144
Unmetered	262

Gallons.

Night flow detected by subdivision, per day.....	2,103,800
Due to inside flow—	
Metered	1,844,000
Unmetered	0
Due to underground leakage—	
Service pipes.....	144,700
Joints on mains.....	13,700
Valves	10,000
Total underground leakage.....	168,400
Due to municipal buildings, fountains, flush basins, horse fountains	18,900
Total flow accounted for.....	2,041,300
Total flow unaccounted for.....	62,500

PITOMETER DISTRICT E, SURVEY NO. 3.

Date of measurement, Feb. 21-27, 1914.

Mean daily supply.....	gallons..	6,530,400
Minimum night rate	do.....	5,777,000
Ratio of minimum night rate to mean daily supply.....	per cent..	88

Subdivision survey:

Started, Aug. 17, 1913.

Finished, Mar. 21, 1914.

Cost..... \$4,094.02

Population:

Resident—

Metered	5,365
Unmetered	15,471
Total	20,836

Floating—

Metered	9,052
Unmetered	8,845

Total	17,897
-------------	--------

Per capita consumption, computed from resident population..... 313

Buildings:

Dwellings—

Metered	479
Unmetered	3,449

Hotels and apartments—

Metered	54
Unmetered	12

Municipal buildings—

Metered	11
Unmetered	3

Federal buildings—

Metered	6
Unmetered	8

Factories—

Metered	17
Unmetered	2

Restaurants—

Metered	47
Unmetered	1

Miscellaneous—

Metered	382
Unmetered	481

Total—

Metered	996
Unmetered	3,956

Gallons.

Night flow detected by subdivision, per day..... 2,644,400

Due to inside flow—

Metered	622,600
Unmetered	915,100

Due to underground leakage—

Service pipes	443,800
Joints on mains	120,000
Service to public hydrants	6,000

Total underground leakage..... 569,800

Due to Federal buildings and fountains..... 338,600

Due to municipal buildings, fountains, flush basins, and horse
fountains..... 121,500

Total flow accounted for..... 2,567,600

Total flow unaccounted for..... 76,800

PITOMETER DISTRICT F, SURVEY NO. 2.

Date of measurement, Sept. 21-27, 1912.

Mean daily supply.....gallons.. 4,180,800

Minimum night rate.....do.. 3,320,000

Ratio of minimum night rate to mean daily supply.....per cent.. 79

Subdivision survey:

Started, Feb. 18, 1913.

Finished, Sept. 26, 1913.

Cost.....\$4,430.23

Population:

Resident—	
Metered	10,817
Unmetered	24,228
Total	<u>35,045</u>

Floating—	
Metered	8,966
Unmetered	1,213
Total	<u>10,179</u>

Per capita consumption, computed from resident population..... 119

Buildings:

Dwellings—	
Metered	1,860
Unmetered	5,247
Hotels and apartments—	
Metered	21
Unmetered	4
Municipal buildings—	
Metered	20
Unmetered	3
Federal buildings—	
Metered	2
Unmetered	1
Factories—	
Metered	6
Unmetered	1
Restaurants—	
Metered	44
Unmetered	3
Miscellaneous—	
Metered	248
Unmetered	549
Total—	
Metered	2,201
Unmetered	<u>5,803</u>

Gallons.

Night flow detected by subdivision, per day..... 3,196,400

Due to inside flow—

Metered	334,500
Unmetered	<u>784,600</u>

Due to underground leakage—

Service pipes	277,500
Joints on mains	22,800
Broken mains	12,200
Valves	<u>7,100</u>

 Total underground leakage..... 319,600

Due to Federal buildings and fountains..... 1,604,000

Due to municipal buildings, fountains, flush basins, horse fountains..... 72,700

Total flow accounted for..... 3,115,400

Total flow unaccounted for..... 81,000

PITOMETER DISTRICT M, SURVEY NO. 2.

Subdivision survey:

Started Oct. 3, 1913.

Finished Jan. 11, 1914.

Cost \$1,175.61

Population:

Resident—

Metered	14,074
Unmetered	192
Total	14,266

Floating—

Metered	5,190
Unmetered	73
Total	5,263

Buildings:

Dwellings—

Metered	1,844
Unmetered	41

Hotels and apartments—

Metered	92
Unmetered	0

Municipal buildings—

Metered	10
Unmetered	0

Federal buildings—

Metered	0
Unmetered	3

Factories—

Metered	0
Unmetered	0

Restaurants—

Metered	1
Unmetered	0

Miscellaneous—

Metered	116
Unmetered	24

Total—

Metered	2,063
Unmetered	68

Gallons.

Night flow detected by subdivision, per day..... 480,500

Due to inside flow—

Metered	314,400
Unmetered	0

Due to underground leakage—

Service pipes	35,200
Joints on mains	11,000
Valves	6,000

Total underground leakage..... 52,200

Due to Federal buildings and fountains..... 63,000

Due to municipal buildings, fountains, flush basins, horse
fountains..... 35,500

Total flow accounted for..... 465,100

Total flow unaccounted for..... 15,400

PITOMETER DISTRICT N, SURVEY NO. 2.

Subdivision survey:

Started, May 24, 1914; finished, June 27, 1914.

Cost..... \$518.37

Population:

Resident—

Metered	6,448
Unmetered	16

Total..... 6,464

Population—Continued.

Floating—	
Metered	1, 084
Unmetered	26
Total	1, 110
Buildings:	
Dwellings—	
Metered	1, 178
Unmetered	6
Hotels and apartments—	
Metered	37
Unmetered	0
Municipal buildings—	
Metered	1
Unmetered	0
Federal buildings—	
Metered	1
Unmetered	0
Miscellaneous—	
Metered	47
Unmetered	23
Total—	
Metered	1, 264
Unmetered	29

	Gallons.
Night flow detected by subdivision, per day	106, 400
Due to inside flow—	
Metered	15, 500
Unmetered	0
Due to underground leakage—	
Total underground leakage, service pipes	9, 500
Due to Federal buildings and fountains	63, 000
Due to municipal buildings, fountains, flush basins, and horse fountains	18, 400
Total flow accounted for	106, 400

PITOMETER DISTRICT O, SURVEY NO. 2.

Subdivision survey:

Started, Jan. 1, 1914.

Finished, May 20, 1914.

Cost

\$1, 869. 53

Population:

Resident—	
Metered	24, 858
Unmetered	691
Total	25, 549
Floating—	
Metered	6, 425
Unmetered	1, 399
Total	7, 824
Buildings:	
Dwellings—	
Metered	4, 881
Unmetered	172
Hotels and apartments—	
Metered	72
Unmetered	1

Buildings—Continued.

Municipal buildings—	
Metered	11
Unmetered	3
Federal buildings—	
Metered	0
Unmetered	2
Factories—	
Metered	2
Unmetered	0
Miscellaneous—	
Metered	265
Unmetered	17
Total—	
Metered	5, 231
Unmetered	195
	Gallons.
Night flow detected by subdivision, per day	508, 800
Due to inside flow—	
Metered	314, 800
Unmetered	8, 000
Due to underground leakage—	
Service pipes	40, 000
Valves	4, 000
Total underground leakage	44, 000
Due to Municipal Building, fountains, flush basins, horse fountains	141, 700
Total flow accounted for	508, 500
Total flow unaccounted for	300

REPORT OF THE WATER REGISTRAR.

WASHINGTON, October 2, 1914.

SIR: I have the honor to submit the annual report of the revenue and inspection branch of the water department showing in detail the work accomplished during the fiscal year ended June 30, 1914.

INSTALLATION OF METERS.

The work during the year consisted in metering that portion of the first high service embraced in the territory between Ninth and Sixteenth Streets and L Street to Florida Avenue NW., Fifty to Fifteenth Streets and East Capitol to E Streets SE., and Congress Heights and Twining City. Meters were also installed in areas previously covered where new houses had since been erected.

In the city proper, especially in the northwest section, the majority of services were of wrought iron in bad condition from long use and corrosion, requiring careful handling, and in many cases repairs before a meter could be installed.

In all cases where the curb cock or box was missing a new one was installed. The long hauls to authorized dumps have greatly handicapped the work, necessitating a considerable loss of time.

The number of meters installed during the year was 8,634, and the number discontinued was 129, making a total now in use 42,161.

The following shows the average cost of installing a meter:

Meter	\$4. 90
Material	2. 21
Labor	3. 43
Total	10. 54

The following shows the average force engaged:

Incharge, master plumber ($\frac{1}{2}$ time ¹)	1
Plumbers	2
Laborers	25
2-horse teams	3
1-horse wagons	2

The following additional work was performed in connection with the installation of meters: Adjusting meter pits to grade; removing meters for test, etc.; setting temporary meters, etc. This work is handled by the following force:

In charge, master plumber ($\frac{1}{2}$ time ¹)	1
Plumbers	2
Laborers	2
1-horse wagons	2

To facilitate the work in connection with the meters in service, the following system has been adopted and has been in successful operation since its inception:

Meters are grouped as follows: Private meters where the consumption exceeds 100,000 cubic feet per quarter; private meters where the consumption does not exceed 100,000 cubic feet per quarter; fire service; and District meters.

Private meters in business establishments that exceed 100,000 cubic feet per quarter are read weekly and a card is provided by this office, which is posted in some convenient place on the premises, and it is the duty of the meter reader to record the consumption on this card. This plan has proved satisfactory both to the consumer and the office, inasmuch as it has reduced the number of complaints in regard to large bills to a minimum, and also keeps the owner of the place in touch with his account from week to week, which has resulted in prompt action on his part in cutting down all waste of water.

Private meters where the consumption does not exceed 100,000 cubic feet per quarter are read eight times a year. When it is found that there has been an extraordinary consumption of water, an examination is made for leaks, and if any are discovered the responsible party is notified.

Fire-service meters are read monthly, and if any show registration an investigation is immediately made as to the cause and an explanation demanded.

District meters in municipal institutions are read monthly, and the responsible department notified if leaks or wastes are found.

District meters installed on service pipes supplying private residences are read at frequent intervals, averaging about eight times a year. Special reading cards are made out and the premises kept under constant observation where the rate of consumption is much in excess of the proportion based upon the minimum payment in advance. Where leaks are found in metered premises, the occupants and the agents (if they have a request filed for such information) are notified, and in case no attention is paid to such warnings and the leaks are large enough to justify such action, the supply is discontinued until the proper repairs are made. For convenience in handling such accounts, houses are divided into three classes: First, large houses, where considerable water is required; in such places, if abnormal use of water is indicated by the meter, the occupant is notified by card to that effect and the case is dropped. Second, medium-sized houses; if the consumption is found to be excessive, a notice is sent to that effect, and if after a reasonable time no change is observed, an examination is made, and if any leaks are found the occupant is again notified that if this condition is allowed to continue large bills will naturally result. Third, small houses, which are occupied in many instances by irresponsible parties; in such cases, where an extraordinary wastage of water is found, the supply is discontinued after one notice has been served.

In the first two classes the notices are generally met with prompt action on the part of the occupant or agent, but in the third class considerable trouble is experienced, as the principal waste can be traced to these small houses.

In every examination for leaks or wastes a reading of the meter is taken and the per diem rate of consumption computed, and by this means the office is enabled to determine the size and character of the leak or waste.

¹As this man also has charge of taking out meters for test and repairs, etc., only half of his time is properly charged to installation.

ORGANIZATION.

For convenience in handling the work the force is subdivided as follows:

Subdivision 1 (E. H. Grove in charge).—Meter accounts, meter computations, meter readings, examinations relative to excessive consumption, tapping of water mains, introduction of water into premises, inspection of new services and repairs made by plumbers, leak records, reports, records, and correspondence.

Subdivision 2 (W. R. Chapell in charge).—Making bills for meter and flat-rate accounts, preparing cut-off notices for nonpayment of water rents, notifications for nonpayment.

Subdivision 3 (J. A. Mudd in charge).—The work of this subdivision consists of the verification of information furnished by owners of premises where water is to be introduced, as to house, lot numbers, and rating, and also changes in street names and house numbers and the entry of same on the office records.

Subdivision 4 (C. F. Eckloff in charge).—The duties of this subdivision consist of examining all permits for the introduction of water, the issuing of taps and curb cocks, and permits for the use of water for building purposes.

Subdivision 5 (H. C. Schaeffer in charge).—Records of meter installation, repairs, cost of maintenance, and inspections in the field.

Subdivision 6 (A. C. Parker in charge).—Posting, checking, and auditing accounts, care of meter and flat-rate account cards and filing of same.

Subdivision 7 (A. Marks in charge).—Leak examinations, cutting off and turning on water, locating services, taps and curb cocks, repairs, and connecting of services for which the water department is responsible, repairs to curb-cock boxes, etc.

Subdivision 8 (W. F. Sullivan in charge).—Meter installation and removal of meters for repairs.

LEAKS AND WASTES.

During the year 55,368 examinations for leaks were made; this included the ordinary leaks at house fixtures and the more complicated cases of underground leaks, the detection of which required considerable time and the employment of experienced men.

Six hundred and seventy-two abandoned water services were disconnected at the tap in the main; of this number 190 formerly served houses that have since been torn down; the remainder were installed many years ago and in a majority of cases never used. This latter class of services has caused considerable trouble in the past owing to the fact that in some cases there was either no data as to their installation or the location was so indefinite as to be practically useless. Leaks from this source were therefore very difficult to locate.

The water supply was cut off from 3,840 houses this year during the period of vacancy, which has resulted in the saving of considerable water and has prevented the reoccupying of these houses without the knowledge of the office, thereby assuring full payment for the time the water was used.

Eleven thousand service pipes, taps, and curb cocks were located during the year. This work was done in advance of the meter installation, thereby rendering it unnecessary to defer the installation of a meter on account of the indefinite location of the service. For this purpose an electrical device, invented by an employee of this office, known as the Grove electric indicator, was used to great advantage, resulting in considerable economy in time and money, besides avoiding the cutting of granolithic sidewalks and asphalt roadways. This instrument was employed during the year in 1,232 cases where it was necessary to determine the exact location of services and private water mains.

The subdivision engaged on leaks and wastes also performed the following additional work: One hundred and seventy-three new curb cocks installed or old ones repaired, 37 services repaired, 10 street washers repaired or new ones installed, 5 hydrants repaired, 9 pressure regulators installed, 9 services lowered to grade, 34 private services disconnected, and 183 house services connected direct to mains. Some of the old services abandoned formerly supplied two or more houses, which accounts for the difference in the number of services.

SERVICE CONNECTIONS.

One thousand three hundred and thirty-seven new service connections were made, inspected, and locations recorded during the year.

Nine hundred and twenty-nine repairs, etc., to water services and appurtenances were inspected and recorded.

This work has been handled by the regular inspector with some assistance from the office force, and inspections have been made in the majority of cases within one hour from the time specified by the plumber doing the work.

Owing to the reduction in number of new services installed, the tapper and assistant tapper have been used on work in connection with leaks and wastes, which work has materially increased. This detail did not occasion any loss of time in connection with tapping mains and saved the employment of more men on leaks and wastes.

REVENUES.

The table of comparative revenues shows a total collection of \$767,178.40.

TABLES.

Table 1 shows statement of collections.

Table 2 shows comparative statement of revenues.

Table 3 shows number of meters in service.

Table 4 shows number of meters repaired.

Table 5 shows consumption of water in premises in which District of Columbia meters were installed.

Table 6 shows consumption of water in buildings owned or controlled by the District of Columbia.

Table 7 shows consumption of water in charitable institutions, hospitals, etc., which receive an allowance of free water.

Table 8 shows consumption of water in business establishments required by law to meter at their own expense.

Table 9 shows miscellaneous work performed.

Table 10 shows general information.

CARD-RECORD SYSTEM.

By means of the perfected card system for meter accounts, in which the color scheme is further improved by the introduction of a series of stripes, tabs, and incisions, it is possible to detect a misplaced card in the entire system within a few moments, thus avoiding delays in locating accounts.

PRINTING.

There were 1,095,995 blank forms, cards, etc., printed during the year under 307 different orders, covering all the work of this character required by the water department.

Great economy of time in obtaining forms and considerable saving in costs have resulted from the installation of this plant, and it has proved its value especially during the past year, in which time there has been a complete revision of the methods of stock and time keeping, thus requiring new forms with the least possible delay.

WATER RATES.

There has been no change in water rates during the past year. The rate for domestic purposes is charged according to stories and front feet. On all tenements two stories high with frontage of 16 feet or less, \$5 per annum. For each additional front foot or fraction thereof greater than one-half, 31 cents. For each additional story or part thereof, one-third of the charges as computed above.

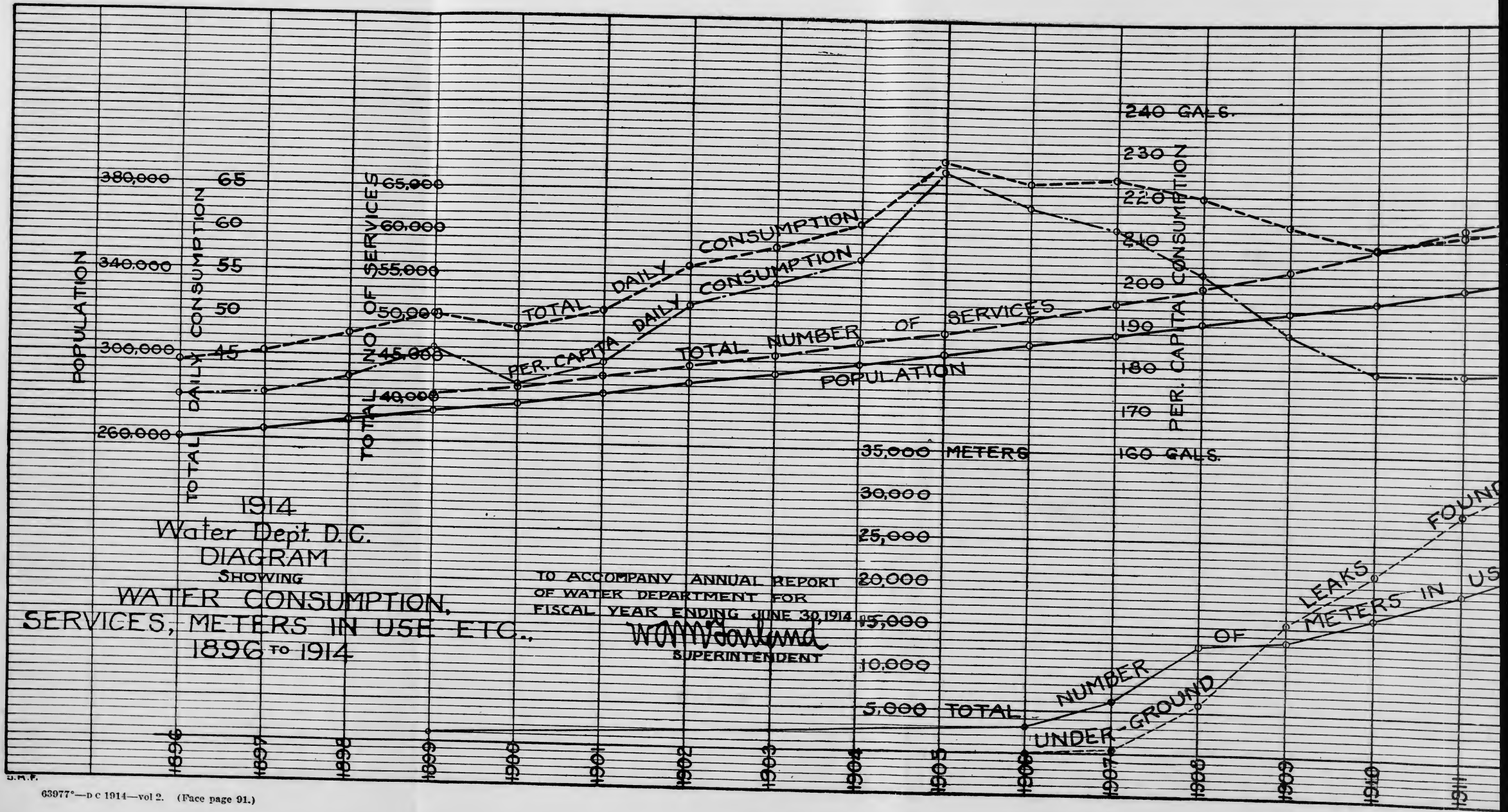
Business premises are rated according to their size, class, volume of business, and water facilities, and rate from \$1 to \$25. If the flat rate on business establishments reaches \$25 or more, the owner or occupant is required to install a water meter at his own expense.

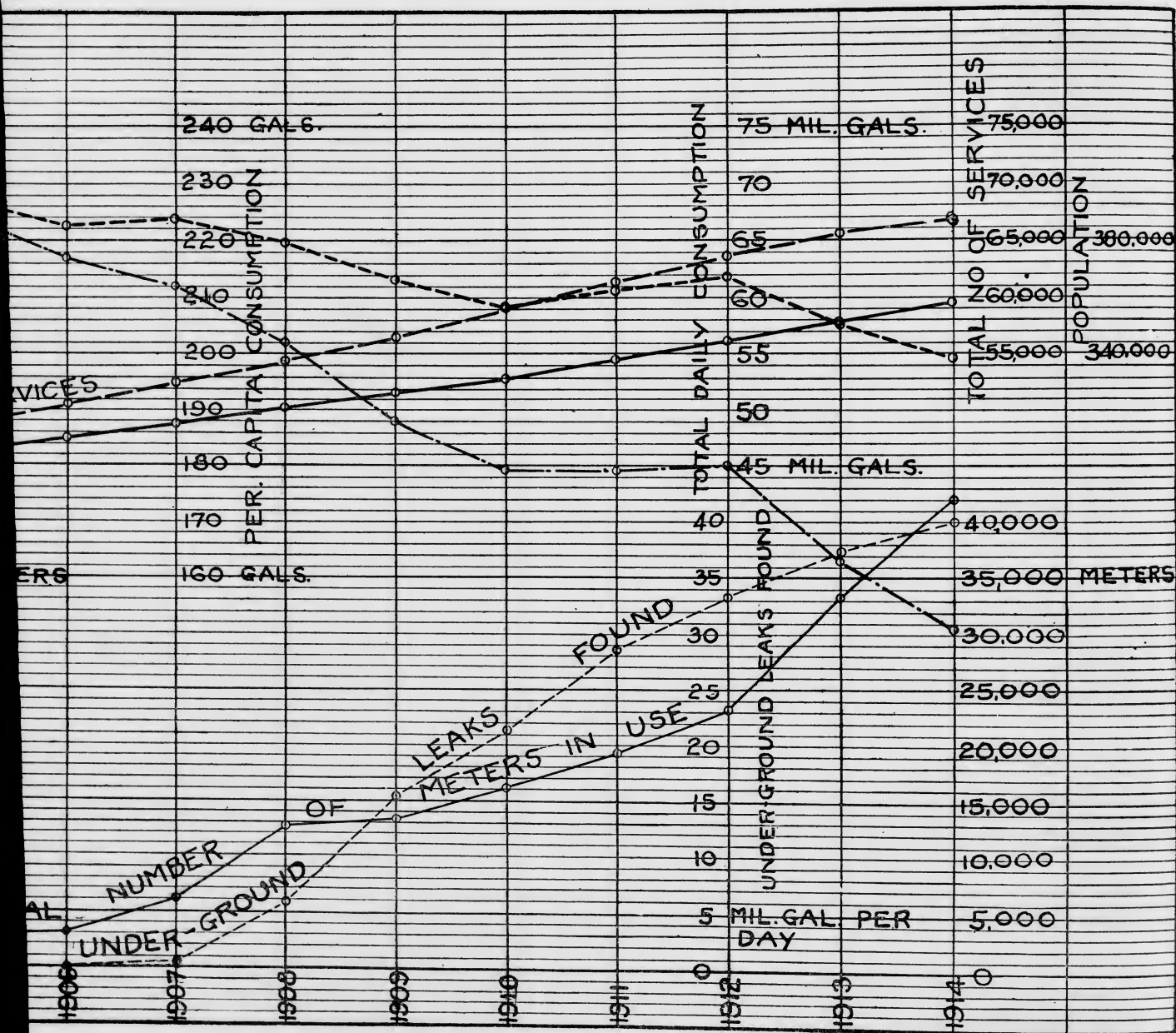
Meter rates.—A minimum rate of \$4.50 per annum is charged against all consumers supplied with water through meters, which allows the use of 7,500 cubic feet of water during the fiscal year, water used in excess of this quantity being charged for at the rate of 4 cents per 100 cubic feet.

CONDITION OF WORK.

Notwithstanding the fact that there has been a very large increase in business over that of previous years owing to the change from the flat rate to the meter system, the condition has been met without any material additions to the force and the work was to date at the close of the year.







This result was obtained by the faithful cooperation of the employees and their willing response to the demands of the service by frequently working after hours, for which I now take pleasure in expressing my appreciation.

Very respectfully,

GEO. W. WALLACE,
Water Registrar.

The SUPERINTENDENT, WATER DEPARTMENT.

TABLE 1.—*Statement of collections.*

Water rents:	
Flat rate	\$229, 016. 10
Meters	413, 696. 85
Building purposes	3, 583. 20
	646, 296. 15
Water-main tax, principal and interest	\$86, 379. 21
Taps and stopcocks	6, 118. 20
Miscellaneous receipts	4, 253. 20
	96, 750. 61
Total receipts	743, 046. 76
Repayments, deposits, and special appropriations	24, 131. 64
Total receipts and repayments	767, 178. 40
Balance on hand July 1, 1913	¹ 61, 218. 29
Receipts and repayments, including balance brought forward from previous year	828, 396. 69

TABLE 2.—*Statement of cash receipts and expenditures of the water fund, District of Columbia, for the fiscal years from June 30, 1903, to June 30, 1914.*

Fiscal year.	Water rents.	Water-main tax—principal and interest on same.	Taps and stopcocks.	Miscellaneous receipts.	Repayments, deposits, and special appropriations.	Total receipts and repayments.	Receipts and repayments, including balance brought forward from year to year.	Expenditures.
1903 (balance brought forward)						\$341, 337. 37		
1904	\$341, 947. 53	\$51, 713. 64	\$6, 522. 67	\$365. 26	\$16, 074. 20	417, 123. 30	\$758, 460. 67	\$708, 105. 58
1905	352, 156. 93	32, 217. 84	8, 603. 80	2, 819. 95	27, 652. 46	423, 450. 98	473, 806. 07	437, 211. 26
1906	362, 266. 54	34, 395. 76	9, 100. 00	23. 60	25, 187. 61	430, 973. 51	467, 568. 32	435, 661. 44
1907	468, 889. 47	51, 319. 62	9, 487. 10	6, 254. 73	19, 912. 51	555, 863. 43	587, 770. 31	530, 379. 39
1908	479, 981. 22	57, 462. 39	8, 688. 10	1, 376. 24	47, 984. 45	595, 492. 40	652, 883. 32	609, 240. 76
1909	502, 894. 45	57, 654. 06	10, 674. 15	1, 530. 08	49, 875. 59	622, 628. 33	666, 270. 89	582, 592. 33
1910	509, 769. 23	76, 905. 15	11, 794. 78	1, 715. 20	26, 498. 58	626, 682. 94	710, 361. 50	620, 243. 69
1911	521, 581. 78	101, 987. 53	8, 824. 35	960. 04	94, 520. 49	727, 974. 19	818, 092. 00	730, 893. 58
1912	545, 405. 47	122, 458. 81	11, 438. 65	2, 817. 50	110, 441. 39	792, 561. 82	879, 760. 24	769, 530. 18
1913	640, 008. 64	138, 693. 75	8, 685. 50	3, 163. 81	14, 923. 91	805, 465. 61	915, 695. 67	854, 477. 38
1914	646, 296. 15	86, 379. 21	6, 118. 20	4, 253. 20	24, 131. 64	767, 178. 40	828, 396. 69	794, 952. 16
	5, 371, 197. 41	811, 187. 76	99, 937. 30	25, 769. 61	457, 202. 83	7, 106, 732. 28		7, 073, 287. 75
1915 ²	640, 000. 00	60, 000. 00	6, 000. 00	3, 500. 00		* 719, 500. 00		
1916 ²	636, 000. 00	60, 000. 00	6, 000. 00	3, 500. 00		* 715, 500. 00		

¹ The above balance does not indicate a surplus in the water fund of receipts, in that it does not take into consideration outstanding obligations incurred but not paid during the fiscal year.

² Estimated.

* Estimated total revenue.

TABLE 3.—Water meters.

	$\frac{1}{2}$ -inch.	$\frac{3}{4}$ -inch.	$\frac{1}{2}$ -inch.	1-inch.	1 $\frac{1}{2}$ -inch.	2-inch.	3-inch.	4-inch.	6-inch.	8-inch.	Total.
American.....		164	5	11	4						184
American, new model.....		94									94
Crown.....		2	11	35	27	11	8	2			96
Empire.....		52		3		1	3	1			60
Enaro.....			13	16	24	4					57
Eureka.....								1			1
Gamon.....		13									13
Gem.....						22	18		1		48
Hersey, disk.....			389	41	91	28	12	2	1		564
Hersey, model F.....		22,271									22,271
Hersey, detector.....							6	6	9	3	24
Keystone, Pittsburgh disk.....			30	38	33	20	23	3			147
Keystone, model W.....		11,331									11,331
King.....		162		2	5						169
Lambert.....		1,137	195	126	102	57	15	7	1		1,640
Lambert, special model.....		463									463
Nash.....	1	140	498	485	277	125	34	13	2		1,575
Niagara.....		4	53	41	58	22	1				179
Standard.....					4	1					5
Thomson.....	1		25	54	40	25	1	1			147
Trident, disk.....		2,308	66	93	84	24	2				2,577
Trident, compound.....							2	1			3
Trident, crest.....							4	13	1		18
Union.....			4	11	7	7					30
Worthington.....		227	40	42	18	17	10	4			358
Worthington, model D.....		27									27
Worthington, model G (old).....		75									75
Total.....	2	38,470	1,329	998	774	364	139	62	15	3	42,156
Register.....											5
Total meters and registers.....											42,161

Meters installed to June 30, 1913.....	33,651
Meters installed in private residences and business establishments not required by law to meter, 1913-14.....	8,500
Meters installed by private parties.....	134
Total.....	42,285
District of Columbia meters abandoned, 1913-14.....	75
Private meters abandoned, 1913-14.....	54
Total.....	129
Total number of meters in service June 30, 1914.....	42,156
Registers.....	5
Total number of meters and registers.....	42,161
Water services in use June 30, 1913.....	65,732
Water services installed 1913-14.....	1,372
Total.....	67,104
Water services abandoned 1913-14.....	190
Water services in use June 30, 1914.....	66,914
Water services metered.....	42,161
Water services unmetered.....	24,753
Percentage of services metered.....	63

TABLE 4.—Meters repaired.

	$\frac{1}{8}$ -inch.	$\frac{1}{4}$ -inch.	1-inch.	1 $\frac{1}{2}$ -inch.	2-inch.	3-inch.	4-inch.	6-inch.	Total.
Meters repaired.....	1,219	157	105	64	40	16	7	3	1,611
Abutments.....	7	3	1	4	.....	.....	1	.....	16
Bonnets.....	6	6	7	6	2	.....	.....	.....	27
Bonnet screws.....	24	5	3	.....	1	.....	.....	.....	33
Bottom cases.....	10	1	.....	1	.....	.....	.....	.....	12
Controllers.....	5	.....	.....	.....	.....	.....	.....	.....	5
Dial plates.....	11	4	.....	1	.....	.....	.....	.....	16
Disks.....	388	73	32	22	9	2	3	.....	529
Disks damaged by hot water.....	10	.....	.....	1	1	.....	.....	.....	12
Disk chambers.....	5	4	2	.....	.....	.....	.....	.....	11
Disk shafts.....	.....	21	9	3	.....	.....	.....	.....	33
Flange bolts.....	28	6	10	15	.....	.....	.....	.....	59
Gaskets (flange).....	100	22	12	1	3	.....	.....	.....	138
Gaskets (registers).....	9	1	.....	.....	.....	.....	.....	.....	10
Gears.....	145	7	6	19	.....	4	.....	.....	190
Glasses.....	28	9	2	.....	2	.....	.....	.....	41
Lids.....	14	14	.....	2	.....	1	.....	.....	31
Pointers.....	13	1	.....	.....	.....	.....	.....	.....	14
Registers.....	149	8	1	5	1	.....	.....	.....	164
Register spindles.....	12	.....	.....	.....	.....	1	.....	.....	13
Top cases.....	8	3	3	1	.....	.....	.....	.....	15
Train gears (intermediate).....	86	87	33	35	12	5	3	1	262
Total parts.....	1,058	275	121	116	40	13	7	1	1,631

Meters in service, including registers.....	42,161
Cost of labor and material for maintenance.....	\$17,367.29
Average cost per meter for maintenance.....	\$0.41

TABLE 5.—Houses that have paid only the minimum rate of \$4.50, those that have exceeded the amount allowed under the minimum rate, and a comparison between the amount of water allowed and the amount of water used, and the amounts paid under the flat rate and the meter schedules; not including premises where private meters are installed, municipal buildings, or charitable institutions.

Houses.	Meters.	Amount of water actually used.	Amount of water allowed per annum under payment of \$4.50.	Difference.	Amount used in excess.	Paid meter rate, 1914.	Paid flat rate, 1908 to 1913.
		<i>Cubic feet.</i>	<i>Cubic feet.</i>	<i>Cubic feet.</i>	<i>Cubic feet.</i>		
Paid minimum rate.....	15,038	14,517	95,142,000	112,785,000	17,643,000	\$67,671.00	\$104,969.65
Paid in excess of the minimum rate.....	13,712	13,727	193,426,200	102,840,000	.....	90,586,200	97,938.48
Paid fractional rates.....	1,230	1,219	6,920,300	7,687,500	767,200	.....	4,612.50
Premises on which an allowance was made for underground leaks.....	96	93	2,497,600	1,457,800	1,038,800	.....	727.14
Vacated before payment could be enforced.....	638	638	24,658,400	3,957,500	.....	20,700,900	10,672.86
No payment for fiscal year 1914, vacant.....	207	204	.....	.....	.....	.....	.....
Total.....	30,921	30,398	322,644,500	228,727,800	19,408,000	111,287,100	181,621.98

Meters in operation.....	30,398
Meters installed to take effect July 1, 1914.....	8,223
Total meters.....	38,621
Total premises.....	30,921
Amount paid.....	\$181,621.98
Average payment for each.....	\$5.87
Rate (considering only the houses occupied during the full year):	
Flat rate.....	\$7.31
Meter.....	\$5.76
Difference.....	\$1.55

TABLE 6.—Meters installed in various buildings owned and controlled by the District government.

Class of building.	Annual consumption.	Premises.	Meters.	Class of building.	Annual consumption.	Premises.	Meters.
SCHOOLS.				SCHOOLS—contd.			
	<i>Cubic feet.</i>				<i>Cubic feet.</i>		
Abbott.....	85,400	1	1	Langdon.....	117,300	1	1
Adams.....	309,900	1	1	Langston.....	167,700	1	1
Addison.....	380,100	1	1	Lenox.....	70,700	1	1
Ambush.....	84,900	1	1	Lincoln.....	123,800	1	2
Amidon.....	120,200	1	1	Logan.....	160,500	1	1
Armstrong.....	484,100	1	1	Lovejoy.....	335,700	1	1
Banneker.....	537,100	1	1	Ludlow.....	456,200	1	1
Bell.....	641,800	1	1	M Street High.....	409,700	1	1
Benning.....	13,500	1	1	McCormick.....	15,000	1	1
Berrett.....	82,500	1	1	McKinley.....	1,171,400	1	1
Birney.....	212,900	1	1	Madison.....	156,000	1	1
Blair.....	340,900	1	1	Magruder.....	188,900	1	1
Blake.....	91,800	1	1	Manual Training, O			
Blow.....	419,900	1	1	Street.....	1113,500	1	1
Bowen.....	146,400	1	1	Manual Training,			
Bowen (S. J.).....	996,900	1	1	Wisconsin Ave-			
Bradley.....	335,900	1	1	nue.....	237,700	1	1
Brent.....	177,700	1	1	Maury.....	85,400	1	1
Briggs.....	250,800	1	1	Military Road.....	108,500	1	1
Brightwood.....	88,500	1	1	Monroe.....	388,800	1	1
Brightwood Park.....	139,300	1	1	Montgomery.....	245,300	1	1
Brookland.....	118,700	1	2	Morgan.....	390,500	1	1
Bruce.....	192,200	1	1	Morse.....	159,000	1	1
Bryan.....	245,000	1	1	Mott (new).....	520,600	1	1
Buchanan.....	239,400	1	1	Mott (old).....	(²)	1	2
Bunker Hill.....	56,400	1	1	Orr.....	76,700	1	1
Business High.....	1,507,500	1	1	Patterson.....	459,200	1	1
Carberry.....	239,100	1	1	Payne.....	635,800	1	1
Chevy Chase and				Peabody.....	386,100	1	2
annex.....	520,100	1	1	Petworth.....	271,100	1	1
Cleveland.....	250,000	1	1	Phelps.....	340,600	1	1
Congress Heights.....	318,100	1	1	Pierce.....	164,000	1	1
Cook.....	104,100	1	1	Polk.....	103,000	1	1
Henry D. Cook.....	503,600	1	2	Potomac.....	221,900	1	1
Coreoran.....	215,700	1	1	Powell.....	255,100	1	1
Cordoza.....	146,700	1	1	Randall.....	138,000	1	1
Cranch.....	194,200	1	2	Randall Highlands.....	106,600	1	1
Crummell, Alex.....	431,800	1	1	Reservoir.....	668,000	1	1
Curtis.....	102,900	1	1	Ross.....	448,500	1	1
Dennison.....	458,800	1	1	Seaton.....	200,900	1	2
Dent.....	279,700	1	1	Simmons.....	234,000	1	1
Douglass.....	561,600	1	1	Simmons, power			
Eastern High.....	94,200	1	1	plant.....	107,300	1	1
Faton.....	511,100	1	1	Slater.....	204,300	1	1
Eckington.....	338,700	1	1	Smallwood.....	128,200	1	1
Edmonds.....	279,100	1	1	Stevens.....	1,112,400	1	1
Emery.....	468,200	1	1	Sumner.....	180,100	1	2
Fillmore.....	177,200	1	1	Syphax.....	204,400	1	1
Force.....	278,400	1	1	Takoma.....	189,500	1	1
Fort Reno.....	6,900	1	1	Taylor.....	291,300	1	1
Franklin.....	388,400	1	1	Tennally.....	200,100	1	1
French.....	62,900	1	1	Thomson.....	504,000	1	1
Gage.....	387,800	1	1	Threlkeld.....	27,100	1	1
Gales.....	178,200	1	1	Toner.....	101,700	1	1
Garnet.....	314,400	1	1	Towers.....	181,600	1	1
Giddings.....	298,100	1	1	Twining.....	241,400	1	1
Garrison.....	223,700	1	1	Tyler.....	164,000	1	1
Grant.....	120,100	1	1	Van Buren.....	132,600	1	1
Greenleaf.....	114,900	1	1	Van Ness.....	85,900	1	1
Hamilton.....	2,800	1	1	Wallach.....	367,200	1	1
Harrison.....	77,700	1	1	Webb.....	161,800	1	1
Hayes.....	262,300	1	1	Webster.....	233,500	1	1
Henry.....	40,700	1	1	Weightman.....	146,500	1	1
Hilton.....	82,900	1	1	West.....	318,300	1	1
Hubbard.....	160,800	1	1	Western High.....	361,300	1	2
Hyde.....	417,000	1	1	Wheatley.....	153,100	1	1
Jackson.....	180,100	1	1	Wilson.....	94,100	1	1
Jefferson.....	738,600	1	2	Wilson Normal.....	1,546,800	1	2
Johnson.....	181,000	1	1	Woodburn.....	111,600	1	1
Jones.....	283,300	1	1				
Ketcham.....	142,000	1	1				
Kenilworth.....	117,300	1	1				
				Total.....	36,287,000	136	146

¹ For fractional part of year only.

Water off.

TABLE 6.—Meters installed in various buildings owned and controlled by the District government—Continued.

Class of building.	Annual consumption.	Premises.	Meters.	Class of building.	Annual consumption.	Premises.	Meters.
ANNEXES.				POLICE STATIONS.			
Warder and Otis Streets.....	<i>Cubic feet.</i> 135,100	2	1	No. 1.....	<i>Cubic feet.</i> 270,200	1	1
822 Eighth Street NE.....	61,500	1	1	No. 2.....	126,800	1	1
642 Massachusetts Avenue NE.....	6,800	1	1	No. 3.....	417,900	1	1
1120 Twentieth Street NW.....	82,800	1	1	No. 4.....	257,000	1	1
730 Twenty-fourth Street NW.....	3,400	1	1	No. 5.....	39,700	1	1
1338 H Street NE.....	21,400	1	1	No. 6.....	585,600	1	1
Eleventh Street, between F and G Streets NE.....	5,300	1	1	No. 7.....	423,200	1	1
2412 Seventeenth Street NW.....	1,200	1	1	No. 8.....	417,200	1	1
423 O Street NW.....	21,800	1	1	No. 9.....	131,600	1	1
1407 Thirty-third Street NW.....	14,000	1	1	No. 10.....	261,900	1	1
37 Shepherd Street NW.....	3,700	1	1	No. 11.....	136,800	1	1
Total.....	316,000	12	11	Substation, Tennallytown, D. C.....	10,700	1	1
FIRE-ENGINE HOUSES, ETC.				Police-boat wharf.....	83,200	1	1
Engine houses:				House of Detention.....	40,800	1	1
No. 1.....	60,400	1	1	Total.....	3,212,600	14	14
No. 2.....	443,800	1	1	PUBLIC PLAY-GROUNDS.			
No. 4.....	36,000	1	1	Columbia Heights.....	34,900	1	1
No. 5.....	27,600	1	1	Georgetown.....	238,800	1	2
No. 6.....	106,300	1	1	Rosedale.....	236,000	1	1
No. 7.....	61,600	1	1	Total.....	509,700	3	4
No. 8.....	99,000	1	1	PUBLIC CONVENIENCE STATIONS.			
No. 8 (stable).....	6,500	1	1	Seventh Street and Pennsylvania Avenue NW.....	356,500	1	1
No. 9.....	40,500	1	1	Pennsylvania Avenue, between Thirteenth and Fourteenth streets NW.....	757,400	1	1
No. 10.....	54,900	1	1	Ninth and K streets NW.....	846,000	1	1
No. 11.....	145,500	1	1	Total.....	1,959,900	3	3
No. 12.....	28,000	1	1	STABLES.			
No. 13.....	77,600	1	1	Parking commission.....	42,000	1	1
No. 14.....	189,200	1	1	Ambulance, Board of Charities.....	18,500	1	1
No. 15.....	31,700	1	1	Street-cleaning department.....	1,581,100	1	2
No. 16.....	51,400	1	1	District of Columbia engineer department.....	328,700	1	2
No. 17.....	196,600	1	1	Total.....	1,970,300	4	6
No. 20.....	40,000	1	1	WORKHOUSE GROUNDS.			
No. 21 and No. 9 Truck.....	62,600	1	1	Superintendent's house.....	36,900	1	1
No. 22.....	48,500	1	1	Wallingford house.....	20,300	1	1
No. 23.....	54,900	1	1	Wards, 1, 2, 5, 6, 7.....	264,500	1	1
No. 24.....	77,100	1	1	Receiving wards.....	267,300	1	1
Truck houses:				Nurses' home.....	39,000	1	1
No. 1.....	107,500	1	1	Greenhouse.....	4,600	1	1
No. 2.....	104,200	1	1	Pumping station and deadhouse.....	183,800	1	1
No. 3.....	64,600	1	1	Total.....	816,400	7	7
No. 4.....	52,000	1	1				
No. 5.....	29,600	1	1				
No. 6.....	53,500	1	1				
No. 7.....	118,000	1	1				
No. 10.....	155,900	1	1				
Chemical engine houses:							
No. 1.....	16,000	1	1				
No. 2.....	75,000	1	1				
No. 3.....	54,400	1	1				
No. 5.....	41,100	1	1				
No. 17.....	188,300	1	1				
District of Columbia fire fighter (boat).....	117,300	1	1				
Total.....	3,115,100	36	36				

¹ For fractional part of year only.

² Water off.

TABLE 6.—*Meters installed in various buildings owned and controlled by the District government—Continued.*

Class of building.	Annual consumption.	Premises.	Meters.	Class of building.	Annual consumption.	Premises.	Meters.
INDUSTRIAL SCHOOLS.				MISCELLANEOUS—continued.			
Home for Aged and Infirm and Industrial Home School for Colored Children.....	<i>Cubic feet.</i> 1 1,781,100	1	1	Automatic flush to sewer—Contd. N Street, between New Jersey Avenue and Fourth Street NW.....	<i>Cubic feet.</i> 74,500	1	1
Industrial Home School.....	1 848,900	1	4	Rock Creek Park, superintendent's house.....	8,400	1	1
Total.....	2,630,000	2	5	Total.....	4,015,200	15	19
MISCELLANEOUS.				RECAPITULATION.			
Asphalt plant.....	1 245,800	1	1	Schools and annexes.....	36,603,000	148	157
Cement warehouse.....	14,300	1	2	Fire-engine houses, etc.....	3,115,100	36	36
Dog pound.....	1 15,100	1	1	Police stations.....	3,212,603	14	14
Lodge house, Brightwood Reservoir.....	34,900	1	1	Public playgrounds.....	509,700	3	4
Market master's office.....	15,800	1	1	Public convenience stations.....	1,959,900	3	3
Morgue.....	34,400	1	1	Stables.....	1,970,300	4	6
Municipal lodging house.....	60,000	1	1	Workhouse grounds.....	816,400	7	7
Municipal fish wharf.....	741,900	1	3	Industrial schools.....	2,630,000	2	5
Naval Battalion wharf.....	17,600	1	2	Miscellaneous.....	4,015,200	15	19
Public library, Takoma Park.....	11,400	1	1	Grand total.....	54,832,200	232	246
Public drinking fountain.....	34,900	1	1				
Quarantine station.....	89,800	1	1				
Automatic flush to sewer: Sixteenth Street and Piney Branch Road.....	2,618,400	1	1				

¹ For fractional part of year only.TABLE 7.—*Premises which receive an allowance of free water.*

Names.	Number.	Consumption.	Allowance.	Exceeded.	Paid.	Meters.
		<i>Cubic feet.</i>	<i>Cubic feet.</i>			
Churches.....	89	3,320,800	5,719,851	17	\$233.04	99
Hospitals.....	9	12,389,100	9,224,721	7	1,336.24	13
Homes.....	22	4,100,000	4,143,645	10	315.28	27
Orphan asylums.....	9	2,426,800	2,819,700	3	96.88	14
Neighborhood houses.....	3	77,500	784,500			4
Schools.....	13	2,454,100	6,569,900	2	186.44	13
Total.....	145	24,768,300	29,262,317	32	2,137.88	160

Amount of water consumed..... *Cubic feet.*
 Amount of water used in excess of allowance..... 24,768,300
 5,419,700
 Total amount allowed free..... 19,348,600

TABLE 8.—*Miscellaneous business establishments under meter, and amount of water consumed for the fiscal year 1914.*

Miscellaneous business establishments.	7,500 cubic feet or less.		7,500 to 100,000 cubic feet.		100,000 to 1,000,000 cubic feet.		1,000,000 cubic feet and over.		Total premises of each class.
	Premises.	Cubic feet.	Premises.	Cubic feet.	Premises.	Cubic feet.	Premises.	Cubic feet.	
Abattoir.....					2	608,600			2
Apartments.....	11	45,900	389	20,978,100	373	89,947,200	11	15,674,300	784
Art gallery.....					1	305,800			1
Bakeries.....	2	12,000	24	836,900	13	4,271,500			39
Ball ground.....					1	613,000			1
Banks.....			5	102,800	7	1,686,200			12
Barber shops.....	1	600	16	463,600	1	104,700			18
Bottling works.....	1	3,400	8	324,900	7	3,180,600			16
Bowling alleys.....			1	8,600	3	380,700			4
Breweries.....					1	1,539,100	3	13,112,500	6
Cemeteries.....			7	249,500	3	527,600			10
Club houses.....	4	7,000	18	794,900	5	1,818,400	2	15,806,200	29
Coal yards.....	4	19,900	11	382,100	1	146,200			16
Dairies.....	1	3,600	9	450,200	9	2,701,300	2	3,046,500	21
Department stores.....			6	276,000	9	3,399,300	2	5,054,600	17
Drug stores.....	1	5,900	21	926,700	9	1,717,500			31
Dye works.....			16	716,000	1	223,700			17
Florists.....			11	578,600	7	2,177,100			18
Garages.....	6	13,000	28	1,142,200	11	2,622,300			45
Gas works.....	2	55,100	6	3,719,900					8
Halls.....	6	24,500	12	397,800	4	877,700	1	4,019,700	23
Homes.....			1	40,100	2	386,800			3
Hospitals.....					1	187,500		1,082,800	2
Hotels.....	1	400	35	1,896,200	43	14,374,900	14	38,641,800	93
Ice yards and plants.....			2	51,700	3	1,814,900	7	40,822,500	12
Laundries.....			6	310,300	9	4,009,400	10	19,905,600	25
Lumber and sawmills.....	1	6,800	5	296,500	3	416,200			9
Lunch rooms.....			33	1,555,200	10	2,113,100			43
Machine shops.....	1	7,000	6	311,500	2	404,600			9
Markets.....	1	4,300			8	10,429,500			9
Office buildings.....	3	10,500	157	6,369,300	77	21,726,100	8	15,154,100	245
Packing houses.....					4	1,620,000			4
Photograph galleries.....			7	222,900	5	911,800			12
Pool rooms.....	1	12,700	1	129,800	1	226,900			3
Printing offices.....	1	4,500	7	360,900	10	2,483,300			18
Race track.....			1	30,500					1
Railroads, offices and yards.....	1	1,200	5	178,700	5	1,902,100	3	97,699,545	14
Saloons and restaurants.....	4	16,300	300	14,380,500	61	9,055,700	1	1,299,500	366
Schools and seminaries.....	4	22,500	31	1,388,600	23	7,312,100	2	6,710,600	60
Scientific institutions.....	2	5,700	2	126,000	1	375,900			5
Small manufactories.....	6	25,900	33	1,306,400	19	4,375,400	1	12,087,400	59
Stables.....	14	53,100	83	3,008,500	20	4,053,000			117
Steamboat offices and wharves.....	1	3,300	1	60,400	5	1,717,700			7
Stone yards.....	1	1,500	2	108,800	1	293,200			4
Stores (miscellaneous).....	40	148,900	164	6,006,900	31	7,604,200			235
Street railway stations and power plants.....	1	2,900	5	239,400	12	3,898,500	1	1,000,500	19
Telephone and telegraph exchanges.....			1	58,200	3	1,027,400			4
Theaters.....	1	4,500	15	701,000	6	1,515,800			22
Turkish baths.....					1	465,000			1
Undertakers.....			4	145,200	1	190,700			5
Warehouses.....	7	33,000	14	439,800	2	271,900	1	1,528,500	24
Fire services.....	34	622,117							
Private residences (private meters).....	36	135,500	203	6,127,900	37	2,629,300	2	4,186,200	278
Vacant during year.....			78	1,042,900					78
Total.....	200	1,313,517	1,790	79,242,900	876	226,644,400	72	296,832,845	2,938

¹ These services accounted for in other premises.

Total number of cubic feet consumed.....	604,031,662
Total value.....	\$246,019.64
Average payment.....	\$33.73

NOTE.—While this quantity of water was consumed during the fiscal year, the last quarterly payment goes into the revenue for the next fiscal year.

TABLE 9.—*Miscellaneous work performed during the year.*

Accounts audited.....	224,370
Accounts posted and checked.....	79,483
Accounts indexed.....	10,889
Authority cards examined and filed.....	2,512
Bills drawn for agents' lists.....	16,212
Cards canceled:	
Meter.....	129
Flat rate.....	348
Card records transferred to books.....	1,745
Cards retired.....	8,634
Changes made on records, ratings, etc.....	6,905
Changes of house numbers made on records.....	798
Curb cock and box locations recorded.....	3,742
Curb cocks issued.....	1,617
Cut-off orders made and recorded.....	8,554
Delinquent notices made and compared.....	24,360
Examination of service pipes recorded.....	2,401
Files indorsed and returned.....	232
Installation cards made, meter.....	7,007
Letters and cards received.....	5,022
Letters and cards sent out.....	15,619
Meter accounts canceled:	
Private.....	54
District of Columbia.....	75
Meter bills made and checked.....	50,702
Meter computations made and checked.....	249,325
Meter charges recorded.....	2,340
Meters ordered out for various reasons:	
Private.....	449
District of Columbia.....	1,201
Meter-repair slips from pump house recorded.....	1,407
Meter tests received and recorded.....	3,791
New meter account cards made and checked.....	7,381
New meter accounts opened:	
Private.....	134
District of Columbia.....	8,500
New schedule accounts opened.....	1,516
Notices of leaks to agents, etc.....	7,140
Notices to plumbers for meter tests.....	156
Permits for use of fire hydrants.....	362
Permits for use of water for building purposes.....	1,629
Plats made.....	25
Plats made of tap locations.....	944
Plumbers' permits examined.....	904
Refunds forwarded.....	296
Reports checked.....	7,026
Reports made, weekly.....	52
Service pipes lowered to grade.....	9
Street washers repaired or replaced.....	10
FIELD WORK—METERS.	
Meters taken out:	
Private—	
Burst.....	10
Choked.....	21
Not registering.....	236
For repairs.....	5
Leaking.....	76
Making noise.....	5
For test.....	93
Miscellaneous.....	3
District of Columbia—	
Burst.....	11
Choked.....	67
Not registering.....	825

Meters taken out—Continued.

District of Columbia—Continued.

For repairs	27
Frozen	4
House torn down	42
Leaking	110
Making noise	35
For test, on request	33
Service abandoned	4

Meter pits, District of Columbia:

Brought to grade	1,427
Lowered	2
New tops installed	43
Relocated	29

Meters, District of Columbia:

Reversed	17
Reset	13
Out and abandoned	75
Installed	8,472
Municipal meters installed	28
Miscellaneous inspections	6,810

Schedule bills made and checked 53,432

Special examination slips made and filed 14,129

Special leak examinations recorded 55,368

Special examinations entered on records 34,425

Taps issued 1,454

Tap, service pipe, and curb-cock locations recorded 11,002

Turn-on orders made and recorded 4,436

Water-main measurements given to plumbers 7,683

Work orders made 5,874

FIELD WORK—GENERAL.

Delinquent notices served 13,125

Meters read 249,325

New services inspected 1,372

Repairs to service pipes, etc., inspected 929

Special examinations 54,679

Taps made:

For services 1,372

Water department (general) 82

FIELD WORK—LEAKS AND WASTES.

Abandoned services disconnected from mains:

Services the use of which have been discontinued during the year 190

Old services of which this office had no record 482

Cut-off at box, leak 1,544

Cut-off at main, leak 75

Cut-off by request 386

Cut-off for vacancy 3,840

Cut-off for nonpayment:

Meters 290

Flat rate 279

Cuts repaired 1,782

Leaks found on mains 47

Locating taps, service pipes, and curb cocks 11,002

Miscellaneous work in connection with leak examinations 32,970

Service pipe, tap, and box locations made with the Grove electric indicator 1,232

Special leak examinations:

First inspection 23,832

Second and third inspections 31,536

Turned on by request 3,866

FIELD WORK—SERVICE PIPES, ETC.

Abandoning private services and connecting with main.....	34
Curb-cock boxes repaired, replaced, or reset.....	5,875
Curb cocks repaired or replaced.....	173
Hydrants repaired.....	5
Pressure regulators installed.....	9
Service pipes repaired.....	37

TABLE 10.—General information.

Average cost of installing a water meter by the department:	
Meter.....	\$4.90
Material.....	2.21
Labor.....	3.43
	\$10.54
Cost of labor and material for maintenance of meters.....	17,367.29
Average cost per meter for maintenance.....	.41
Consumption of water through meters:	Cubic feet.
District meters.....	322,644,500
District meters in municipal buildings.....	54,832,200
Private meters.....	604,031,662
Private meters in charitable institutions.....	24,768,300
	1,006,276,662

Meters in service.	In use June 30, 1913.	Installed, 1914.	Aban- doned, 1913.	Total.
District meters.....	30,220	8,472	71	38,621
District meters in municipal buildings.....	230	28	4	254
Private meters.....	3,051	126	52	3,125
Private meters in charitable institutions.....	155	8	2	161
Total in use June 30, 1914.....	33,656	8,634	129	42,161

Average cost of reading meters.....	\$0.12
Average cost of computing accounts and making bills.....	.12
Average payment for premises in which meters were installed by the department.....	5.87
Average payment for premises in which private meters were installed.....	83.73

Revenue:

For metered water—	
District of Columbia meters.....	\$184,853.16
Private meters.....	228,843.69
	\$413,696.85
For flat-rate accounts—	
Water rents.....	229,016.10
Water for building purposes.....	3,583.20
	232,599.30
Total revenues for the fiscal year 1914.....	646,296.15

Water services:

In use June 30, 1913.....	65,732
Installed 1914.....	1,372
	67,104
Abandoned 1914.....	190
Water services in use June 30, 1914.....	66,914
Water services metered.....	42,161
Water services not metered.....	24,753
Percentage of services metered.....	63

DIVISION E.—Plans, estimates, and tests.

SIR: I have the honor to submit the following report of work done by division E, "Plans, estimates, and tests," for the fiscal year ending June 30, 1914.

The work of the division is divided under two heads, "Tests and experiments" and "Miscellaneous drafting," in charge of H. D. Yates and C. P. Heins, respectively.

Report on the work performed by these subdivisions will be taken up separately and in the order indicated.

The subdivision of "Tests and experiments" is charged with testing and correcting the measuring apparatus used by the department; with making accuracy tests of all water meters to be used in the District of Columbia; with purifying the oil removed by the waste-cleaning machine; with making special

tests of boilers and machinery as called for; with figuring the daily pumpage, consumption, station duty, etc., and with keeping necessary records.

A brief summary of the tests made during the year is as follows: Water meters, $\frac{1}{2}$ to 6 inch sizes, tests for accuracy, 14,730; valves, $\frac{1}{2}$ to 30 inch sizes, tests for leaks, 1,281; corporation cocks, $\frac{1}{2}$ to 2 inch sizes, tests for leaks, 2,243; curb cocks, $\frac{1}{2}$ to 1 $\frac{1}{2}$ inch sizes, tests for leaks, 6,083; and pressure gauges tested and corrected, 76. Also made durability tests of small-sized water meters, acid and fluid tests of grease, accuracy tests of Venturi meter recorders, tests of pressure regulators, fire hydrants, etc., and overhauled Venturi meters, CO₂ recorder, and other testing and measuring apparatus installed in the pumping station.

Accuracy tests of the 10,000 $\frac{1}{2}$ -inch Keystone water meters furnished under contract during the year were finished March 10, three days after the last shipment of 284 meters was received.

During the year there were 1.060 gallons of oil removed from the material passed by the waste-cleaning machine and rendered fit for use in oil cups.

All of the coal burned at the pumping station during the year was bituminous coal, was purchased on the "ash, moisture, heat unit" basis. Samples were collected from each delivery, which was usually a 300-ton lot, and forwarded to the Bureau of Mines, where all tests were made. The analyses averaged 2.4 per cent moisture "as received" and 18.06 per cent volatile matter, 71.87 per cent fixed carbon, 1.57 per cent sulphur, 10.1 per cent ash, and 13,994 British thermal units per pound, on the "dry coal" basis.

The aggregate slip of all pumps during the year, as figured, based on pitometer determinations, was 5.4 per cent, but this figure is not comparable with other pitometer determinations, as we have been applying corrections to the pitometer readings since last February, when division B found the scales furnished by the pitometer company to be incorrectly graduated. The correction constants increase former determinations considerably.

The total pumpage for the year was 9,201,627.900 gallons, which is 165,651,800 gallons less than in 1912-13. The cost of operation was \$46,774.26, making the total operative cost of pumping 1,000,000 gallons of water into the mains \$5.08. This cost is approximately 3 per cent less than in 1912-13 and is due to a reduction in the item of "Repairs to boilers, etc." (which included the cost of the Crowe chain-grate stokers in 1912-13), all other items entering into the operating expenses showing increases.

The station duty for the year was 73,854,582 foot-pounds per 100 pounds of coal. This is 2.76 per cent greater than the duty obtained during the preceding year and represents an annual saving of 148.4 gross tons of coal. This saving was accomplished during the second half of the year and is in part due to the removal of scale from the boiler tubes, in part to lessening the radiation from tops of boilers by covering same with ashes, and in part to repairing covering on steam mains and the stoppage of leaks between steam mains and idle boilers. The work was begun during the month of December under the supervision of Mr. T. F. Ryan, several helpers and laborers being employed temporarily for the purpose. The station duty obtained during the second half of the year was 75.46 millions of foot-pounds as against 69.22 for this period of the preceding year, representing a net saving of 235.5 gross tons of coal.

The accompanying tabular statements show the sizes and makes of all private and municipal water meters tested during the year, and the operative cost of pumping.

The normal force employed, in addition to Mr. Yates, in charge of this subdivision, consisted of 1 skilled laborer, 1 draftsman, 1 plumber, and 1 helper.

Cost of operating pumping engines at the District pumping station during the year ending June 30, 1914.

Operating expenses:

Salaries—

1 chief steam engineer, one-half annual salary---	\$875.00
3 steam engineers-----	3,300.00
3 assistant steam engineers-----	2,425.00
3 firemen-----	2,200.00
4 oilers-----	1,983.44

Miscellaneous per diem labor—boiler cleaners, substitute firemen, steam fitter, electrician, helpers, and laborers-----	9,232.16
---	----------

\$20,015.60

102 OPERATIONS OF THE ENGINEER DÉPARTMENT, D. C.

Coal:

688,240 pounds bituminous coal, at \$3.27 per ton (corrected for deductions on account of B. t. u.'s and excess ash) -----	\$979.84
11,468,077 pounds bituminous coal, at \$3.35 per ton (corrected for deductions on account of B. t. u.'s and excess ash) -----	17,144.92

Cost of coal chargeable to plant ----- \$18,124.76

Supplies:

Cylinder oil, engine oil, crank-case oil, grease, waste, packing, washers, lard oil, and graphite -----	2,856.80
Repairs to pumps, engines, boilers, including grates: -----	
Per diem labor -----	\$2,507.13
Material expended -----	3,269.97
	5,777.10

Total cost of operation ----- 46,774.26

Total pumpage for the year, without allowance for slip ----- gallons -----	9,201,627,900
Greatest amount pumped in 1 day (July 23) ----- do -----	32,206,500
Least amount pumped in 1 day (Dec. 20) ----- do -----	20,098,900
Average per day ----- do -----	25,209,900
Average dynamic head against pumps ----- feet -----	116.99
Duty = $\frac{\text{Gallons pumped} \times 8.34 \times 100 \times \text{dynamic head}}{\text{Total fuel consumed}}$ -----	73,854,582

Cost of fuel, pumping 1,000,000 gallons 1 foot high ----- cents ----- 1.68

Total operative cost of pumping 1,000,000 gallons 1 foot high ----- cents ----- 4.35

Total operative cost per 1,000 gallons pumped ----- do ----- .508

NOTES.—The above items of supplies and repairs were furnished by the clerical division. The pumpage is figured from plunger displacement, without allowance for slip. The aggregate slip of all pumps during the year, based on pitometer determinations, is 5.40 per cent of the total displacement. The average dynamic head is figured from the total work done by pumping engines and generators. The fuel consumed is the total coal burned excluding the heating system. The cost of heating—569,740 pounds of coal—was \$852.06.

Tests of private and municipal water meters (excluding meters on endurance test) during the fiscal year ending June 30, 1914.

Meter.	Size in inches.										Total.
	$\frac{1}{8}$	$\frac{1}{4}$	1	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2	3	4	6		
American -----	113				2						115
Crown -----	3	1	12		20	6	4				46
Empire -----	2	2	7		1						12
Enarc -----		4	12		6	2					24
Eureka -----							1				1
Gamon -----	28										28
Gem -----						6	6	4			16
Hersey -----	1,843	77	4		20	9	7	2			1,962
Keystone -----	10,641		2		2	2	1				10,648
King -----	13										13
Lambert -----	114	57	11		11	4	5				202
Nash -----	1	161	115		65	54	6	5			407
Niagara -----	1	19	13	6	21	18	1				79
Pittsburg Disc -----	14	13	14		5		5	2			53
Standard -----		3				1					4
Thomson -----	3	38	19		11	2					73
Trident -----	392	19	13		14	5	4	3	1		451
Union -----	3	25	48			4					80
Worthington -----	221	23	26		9	9	5				203
Total -----	13,392	442	296	6	187	122	45	16	1		14,507

The subdivision of "Miscellaneous drafting" is charged with work of preparing all plans and estimates and giving out miscellaneous information, correspondence, records, and reports. The detail of the work performed follows:

1. Drawings and tracing made.....	1,536
2. Projects made.....	135
3. Cards forwarded to the assessor.....	371
4. Communications written.....	1,099
5. Foreman plats recorded.....	793
6. Files forwarded to the assessor.....	119
7. Locations recorded, no plats necessary.....	81
8. Permits passed (May 11, 1914, to June 30, 1914).....	109

The above statistics show an increase of 35.7 per cent in the item numbered 1 over the figures for the previous fiscal year, while the item numbered 4 represents an increase of 96.6 per cent. Items numbered 2, 3, and 6, having to do with water-main extensions, show decreases in numbers, the respective per cent decreases being 22.4, 22.5, and 28.3. Item 5 shows an increase of 18.2 per cent.

The increase in the number of drawings and tracings made was due principally to the fact that the paper tracings drawn up for levels for projects were included in the number together with the "intersection cards," showing mains, valves, etc., at street intersections. The work of constructing the latter was taken over by this division at the beginning of the year just ended. Here it may be said, that instead of recording the engineer's field notes in books and then making up the intersection cards, involving three operations, as was done last year, the engineer's notes, after being used in making up the cards, are bound in notebooks in a manner similar to that of the field notes for other work, making an appreciable saving in work and time. The increase in the number of foreman plats recorded, in view of the fact that the number of projects for water-main extension decreased, is somewhat remarkable, and may be accounted for by the large number of plats necessary to plot the work of replacing the large number of old hydrants with new ones.

Beginning January 5, 1914, not only formal letters, but reports, notes, and communications of every nature written by this division were included in the item numbered 4. This naturally increased the number of communications very materially.

Besides the paper tracings for projects, the foreman plats, and the intersection cards, there were many mechanical and a few architectural drawings worthy of mention. The titles of the more important of these follow:

Maps showing mains in and about site of Anacostia pumping station.

Garage and shops to be erected on portion of property yard, Bryant Street, west of Second Street NW.

Storage house for iron to be built in rear of Bryant Street pumping station.

Workshops for gardener to be erected in propagating gardens, Anacostia pumping station.

Trunk and feed mains supplying water-service areas.

Electric indicator to determine elevations of water in towers in the southeast county.

Surface and underground construction, Bryant Street pumping station and vicinity.

Surface and underground construction, Reno pumping station and reservoir.

Surface and underground construction, Brightwood Reservoir.

Sanitary drinking fountain.

Twelve-valve, 2-way.

Four-inch valve, 2-way.

New public hydrant.

Hydraulic motors applied to various large valves.

There were also some drawings of less importance showing smaller implements and pieces of apparatus used in the offices, in the field, or at other places occupied by the department.

One of the most important duties of this subdivision is the plotting of the notes taken by the engineers of the department in the field. This work is described in the annual report of the engineer department for the fiscal year ending June 30, 1913, page 101. The only change in the work as there described is that now a title is placed at the top of the card, indicating the character of the work represented by the plat. The largest plat made in the past year was the one showing the 8-inch water main in Blue Plains, D. C., where approximately 7,500 feet were laid.

The preparation of projects for water-main extensions, the sending of cards and files to the assessor, the writing of communications, the "locations recorded, no plats necessary," all of which are listed in the table beginning this report, are fully described in the annual report of the engineer department for the year ending June 30, 1913, page 101.

The property represented in the petition of the applicant is now shown in red crayon on the tracing. As this shows white on the blue prints, it is readily discerned by field parties and all others interested in the extension.

The giving of information to the public, the posting of the graphical log, and of the work-in-progress maps, and the plotting of "green connection cards" are described in the above-named report, page 102. The Anacostia pumping-station data has been plotted on the log since the station was put into operation as part of the first high-service record. The work-in-progress maps have been carefully checked in the course of the year to be certain that the information contained thereon is correct.

The photograph albums in the office of the superintendent have been posted whenever there was occasion to do so.

The organization chart of the water department has been corrected four times in the course of the year, new prints made after the corrections had been posted, and these distributed to the proper officials.

Due to the appointment of an additional assistant to the engineer commissioner, and the consequent reassignment of duties, a new organization chart of the government of the District was made. Blue prints of this were made and distributed.

The organization chart of the engineer department, made up in the previous year, was discontinued, because of the large number of changes in the several departments, the posting of which was impracticable.

The work of computing and posting hydraulic heads from pressures taken on fire hydrants, of posting leak-gang reports and tapper's cards, and of checking the subdivision of parcel property is described, pages 102 and 103, of the report previously referred to.

The flat-rate method of charges for 3, 4 and 6 inch connections with water mains 12 inches or less in diameter, adopted two years ago, has proved an equitable arrangement between the consumers and the department.

Several new 50-foot scale maps of the city and 100-foot scale maps of the southeast, northeast, and northwest counties have been made in the course of the year. As these maps have been completed, two tracings of each have been made and posted, one in the books of the water registrar's office, the other in the books of room 310.

Dilapidated map tracings have been replaced by new ones. The 50 and 100-foot scale maps and map tracings of this office, and that of the water registrar's and the 300-foot scale maps and map tracings of this office have been kept posted to date throughout the year. Several details of complicated intersections have been added to the 300-foot scale-map tracings. There was added also to section 6 of both 300-foot scale map and map tracings, a portion of the District along the eastern shore of the Potomac River heretofore not shown. When the 8-inch water main was extended to serve the several institutions at Blue Plains, D. C., it was necessary to show this newly-added portion in order to plot the main on the maps.

In the course of the year 24 sets of 300-foot scale blue prints (2 cloth and 22 paper sets) were prepared for distribution to the field parties, leak gangs, water registrar's office, etc. Service lines were placed upon them with yellow crayon, and the several sets segregated before the prints were distributed.

The work of copying, onto the permanent cloth records, old maps drawn many years ago has been carried on throughout the year when the more important work would permit. The copies made are checked thoroughly, before the old maps are destroyed, in order that no information contained upon the latter would be lost during the copying.

The system for recording time and for distributing work in the division, which has been in use throughout the fiscal year just ended, has been very successful in its operation and results. A complete description of the "time books" and "work assignment board" may be seen in the report of this division, pages 103 and 104 of the annual report of the engineer department for the fiscal year ended June 30, 1913. Since that time a new and larger board has replaced the old. This was made necessary by the increased number of men in the division.

In the same report, page 104, there is a description of the work of passing schedules of work to be done by the surface department. This work has been in progress at times throughout the year.

The index, which has as its object the assignment of a single name to each of the named alleys of the District, is very near completion.

On January 5, 1914, the printed pamphlets containing a brief description of the "water supply, purification, and distribution systems of Washington, D. C." were received from the press. The data for this booklet was compiled by this division from the most authoritative sources and to show the latest available data. Beginning with a description of the intake at Great Falls, the text describes in relative order the conduit, the sedimentation reservoirs, the Washington Aqueduct tunnel, and the purification plant followed by a description of the distribution system with its pumping stations, reservoirs, etc. Next in order is a chapter of brief paragraphs, each of which cites some fact of interest concerning the waterworks of the District. A brief historical sketch of the purification works is next presented, followed by a concise statement concerning the "pending projects for increasing the water supply of the District of Columbia." A double page plate in the center of this interesting booklet illustrates, graphically, the elevations supplied by the different water service areas. The last of the 16 printed pages contains recent statistics concerning the distribution system. It is hoped that this booklet conveys the information it contains in a clear and concise manner, both to the engineer and to the layman, and it is believed, from the comments of those who have already received it, that the benefits to be derived from the instructive and useful information which it contains more than compensates for the expense of its compilation and publication.

The fire-hydrant index book, containing the locations, elevations, dates of setting, and make of all fire hydrants of the District, together with the respective job numbers under which they were set, has been completed and is now kept posted to date as new hydrants are placed.

The index for miscellaneous maps was carefully checked in the past year, and the work of indexing the miscellaneous drawings has been kept up to date.

The index of samples of earth taken from excavations made by the construction gangs in various parts of the District was completed in the course of the year.

The cost sheet, posted monthly by this division from data compiled by division F, was discontinued because of the impracticability of readily obtaining the necessary data under the new system of cost keeping.

The reorganization of the department, which occurred at the beginning of the past fiscal year, affected the work of the subdivision somewhat. The making up of cards showing valves, mains, etc., at street intersections (intersection cards) and the keeping of the field notes for this work, together with the posting and correction of the 50 and 100 foot scale maps, was taken over by this subdivision. With this work came also the answering of requests for information relative to cut-offs in the water mains made by leak and construction gangs, pitometer division, etc. In order to carry on this work two assistant draftsmen were transferred to this subdivision from the division under which this work was previously performed.

Another phase of the department's work fell to this division by the removal to other positions of the men who previously performed the work. This includes the care of catalogues and index, the writing of the morning report showing the location of the construction and inspection jobs under way, and the daily computation of the data for posting the graphical log. These latter-named duties were taken over without adding to the personnel of the subdivision.

There have been several interesting and instructive diagrams made in the course of the year. The names of these follow:

Charts showing hourly consumption on gravity service as recorded by Venturi meters on Fourth Street NW.

Diagram, maximum and mean consumption, third high service, from July, 1909, to May, 1914.

Diagram, water rents and consumption per day, 1898-1913.

Chart, actual and estimated monthly receipts and expenditures of the water department.

Elevation diagram showing territory supplied by the different water-service areas of the District.

Functional and expense diagram, year ending June 30, 1913.

The work of passing permits for copings, driveways, retaining walls, etc., is somewhat similar in nature to that of passing surface-division schedules. When a permit is granted for the construction of a driveway, coping, etc., this division ascertains the location of water valves, mains, etc., in the vicinity of the proposed construction. If there is no interference with the underground construction, the permit is rendered "passed" by this division for the department.

At the beginning of the year it was proposed that a bulletin be printed each week setting forth the work of the department, together with facts of interest and matters of a personal nature. This bulletin, while not adopted by the department as a whole, was begun by this division. It has taken the form of a typewritten sheet or sheets, depending on the length of the subject matter presented, and contains the personnel of the division, a brief statistical summary of its work for the previous week, and paragraphs devoted to the work and pleasure of its members. The bulletin has often presented articles for the instruction, welfare, and betterment of all who read it.

The drawings and specifications of the garage and shops, completed in the early part of the year, were later revised and corrected. It was decided to exclude the garage from consideration at this time, building only the shops. This set of drawings consists of 10 sheets, 24 by 36 inches, and 7 sheets of full-sized details.

To devise a method for protecting the edges of the 50 and 100 foot scale maps from the constant hard usage, a band of gummed tape was placed around the border of a few of them. This work was done only when the rush of more important work permitted.

The lockers in room 310, 310½, and 312, arranged in rows about the walls of these rooms, were in the way, and in order to place them in a more advantageous location and in order to utilize fully the surplus space in room 314 taken over in the course of the year by Mr. J. S. Garland, it was decided to divide the latter into two parts, reserving one part for Mr. Garland's office and using the other part as a locker room. Acting upon this decision, this division prepared plans for the work, which was executed under the direction of the assistant superintendent of the District Building. Plans for the arrangements of the lockers in the locker room were drawn by this division. Bases were designed for the several tiers of newly placed lockers to permit of better ventilation of the two rooms. Where it was necessary to divide tiers of lockers new sides were made. Besides the sketches which were drawn for the above work, this division performed the actual work of taking down, removing, and reassembling the lockers. The locker room now contains the lockers used by the members of the water department on the third floor of the District Building.

The statements describing the routine work of each member of the division, made up at the beginning of the previous fiscal year, have been revised and now present the descriptive subject matter in greater detail.

By numbering all of the trunk water mains of the District it was proposed to compile them into the form of a directory, whereby they would all be numbered, described, and the routes which they followed noted. The proposed directory became so very complicated that the idea was abandoned as impracticable.

To facilitate the work of receiving messages over the telephone and sending communications, both inside and outside of the office, which invariably assumed the same form, printed forms were designed by this division and printed by the water department press for the use of the division and for the whole department. Formerly much time was unnecessarily consumed in writing out the full statements which were received over the telephone, while now the parts of the statements which are unchanging are in printed form and it is necessary only to fill in the variable data. It is obvious that time is not only saved by the parties at either end of the line, but that the line itself is the sooner opened for other messages.

Whenever information as to the location of water mains, the water pressure, etc., is given over the phone, the name and address of the person is taken and a post card containing the same information is subsequently mailed to the person in order to eliminate the chance of an error. Two styles of post-card forms were printed to be used for this purpose. There were also made up and printed six other labor-saving forms, five for the use of this division and one for the use of the entire department. They have all proved of great value.

A large framed map of the water mains at the Bryant Street pumping station and vicinity, hanging on the wall of the station, drawn up a number of years ago and consequently somewhat out of date, was brought to this office and

posted to date. The same careful style of work which characterized the original map was used in making the corrections and additions. When the posting was completed the map was returned to its place at the station.

At the request of the assistant to the engineer commissioner this division compiled a statement of projects for water-main extension. Under three titles were given the number of feet and size of the proposed mains, and the estimated cost of each extension. The three heads under which the projects were grouped were (1) showing water-main extensions under construction; (2) showing water-main extension applied for and approved, but construction as yet not begun; (3) showing water-main extension pending approval.

A statement concerning the average cost per item of the plats, projects, etc., made by the division follows:

Plats for job No. 2556 (drains to hydrants).....	\$0.464
Plats for job No. 304 (valves in place of old).....	.506
Plats for job No. 306 (fire hydrants in place of old).....	.510
Plats for miscellaneous work (assessment and deposit jobs).....	.823
General average for all plats ¹.....	.575
Projects for water-main extension.....	.984
50 and 100 foot scale water-main maps.....	(²)
50 and 100 foot scale water-main map tracings.....	1.312
Intersection cards.....	.948

Other work carried on by the division of a general nature which need only be named includes miscellaneous lettering and typewriting, revising and correcting miscellaneous maps and blue prints, and indexing and correcting miscellaneous drawings.

The number of men in the subdivision, including the one in charge, was 10, an increase of 1 over the personnel of last year.

The vast amount of detail and special work prepared by division E was made possible only through the complete and harmonious cooperation of the men in the division, of whose work I can not speak too highly. In closing my report, I wish to take this opportunity to give the credit due them and officially thank them for their willing and efficient assistance.

Respectfully submitted.

FREDERICK W. ALBERT,
Assistant Engineer.

The SUPERINTENDENT, WATER DEPARTMENT.

DIVISION F.—Accounting and stores.

SIR: I have to submit the following summary of the work done by the division of accounts and stores under my charge for the fiscal year 1914:

ACCOUNTS, JOB COSTS.

On July 1, 1913, a number of changes from the old method were introduced in this branch to avoid all duplication of work and provide a simple, accurate method of keeping cost accounts. With this end in view a printed chart, showing the ordinary activities of each division, with corresponding job numbers, was issued for the information and guidance of all employees in making accurate returns for labor and material expended on work. As the accounts of the department had heretofore never included the indirect cost of work properly chargeable on account of departmental and divisional superintendence, distinct accounts were opened to cover these items, and when their percentage relation to the work of the department was ascertained the various accounts were given their proper burden of overhead charges.

The expense account and other tables prepared by this division for publication in your annual report are completed and show that the department expended during the fiscal year 1914 for labor and material \$802,025.35. The statement following shows the miscellaneous clerical work accomplished.

¹ The great reduction in the average cost per plat, compared with the figures for the previous fiscal year, is attributed to the increased efficiency of the draftsmen and to the fact that the cost of recording the work shown on the plats upon the map tracings (averaging 40 minutes per plat) was excluded from the estimates.

² The time upon the 50 and 100 foot scale maps could not be computed.

Number of papers received and forwarded in water department, July 1, 1913 to June 30, 1914.

Vouchers forwarded.....	2,788
Requisitions made.....	682
Letters mailed.....	946
Cards mailed.....	203
Official letters written.....	937
Work orders issued.....	1,321
Files received and forwarded.....	1,487
Pay rolls forwarded.....	1,254
Miscellaneous papers received and forwarded.....	53,632
Records made on cards.....	1,615
Letters filed.....	1,188
Transfer vouchers forwarded.....	456
Total.....	66,509

ACCOUNTS, STOREKEEPING.

In this branch the whole system of stores accounting was changed, and for the first time in its history the department is now able to render a daily balance showing the total value of all supplies and equipment on hand and in use. To show in detail the work accomplished by the stores branch of this division the following is taken from the annual report of the stores clerk, Mr. William V. Robertson, whose work entitles him to the highest commendation:

"There have been prepared and forwarded 112 requisitions, averaging 27 items each.

"There were received and issued water-main accessories, as follows:

	Received.		Issued.	
	Quantity.	Value.	Quantity.	Value.
Pipe, 3 to 48 inch.....feet..	106,968	\$80,143.57	94,764	\$72,076.85
Valves, 3 to 30 inch.....	990	19,698.61	889	18,352.31
Fittings, 3 to 48 inch.....	2,914	10,393.55	3,356	11,843.07
Valve casings and covers.....	959	4,890.90	977	4,982.70
Terra-cotta pipe, 3 to 24 inch.....pieces..	7,791	10,255.05	7,803	10,265.22
Cement rings.....	3,599	2,038.00	3,989	2,271.12
Fire hydrants.....	316	9,459.20	506	15,357.10
Lead.....pounds..	346,811	17,340.55	311,144	15,557.20
Jute.....do..	2,618	104.72	6,327	253.11
Water meters, 8-inch.....	10,100	49,525.00	9,505	46,609.50
Meter-box frames and covers.....	7,754	8,374.32	7,773	8,394.84
Total.....		212,223.47		205,963.02

"In addition to the above there has been received and issued large quantities of miscellaneous hardware and plumbing supplies, engine-room and boiler-room supplies, stationery, furniture, paints and oils, fuel, electrical supplies, stable supplies and forage, lumber, foundry supplies, automobile supplies, etc.

"During the year there has been collected, broken up, stored, weighed, and delivered to the contractor old material, as follows:

	Quantity.	Value.
Cast-iron scrap.....pounds..	449,513	\$1,910.43
Wrought-iron scrap.....do..	40,801	173.40
Cast-iron borings.....do..	20,640	51.60
Oil barrels.....	15	15.00
Miscellaneous, cable, hose, etc.....pounds..	2,386	91.06
Obsolete and unserviceable tools and materials.....lots..	33	1,144.62
Total.....		3,386.11

"During the year there was recovered from the scrap pile, lead and brass, as follows:

	Quantity.	Value.
Lead.....pounds.....	15,064	\$753.00
Brass.....do.....	9,006	900.20
Total.....		1,653.68

"The value of supplies on hand, not including tools and equipment, at close of the year June 30 was \$162,476.32. The value of tools and equipment owned by the department, in use and stored in storerooms, at close of year was \$485,556.01. The total accountability of this subdivision at that time was \$648,032.33.

"There has been installed during the year a complete modern business system of storekeeping and property accountability, the object of which was to provide sufficient safeguards for the care of materials and equipment, and at the same time increase the efficiency of the employees. Warerooms were equipped with bins which embody the most approved methods for the handling of miscellaneous supplies, such as are carried in stock by the department.

"All supplies on hand were assorted, the obsolete and unserviceable condemned and sold, and the serviceable classified and stored in bins. An inventory of all property, except real property, owned by the department, including tools and equipment in use, was taken, and an account opened with each article. These accounts are a perpetual inventory of quantity and value of all material and tools owned by the department.

"A personal account is kept with each individual having possession of department tools. These personal accounts are a perpetual inventory showing quantity and value of tools in possession of the individual.

"A daily statement is rendered to the superintendent showing the value of materials and tools on hand at the close of the business each day."

The employees of this division have ungrudgingly given the department their best efforts. I deeply appreciate the loyal support they have given me.

Very respectfully,

SAMUEL RIGGS,
Clerk, in Charge of Division F.

The SUPERINTENDENT, WATER DEPARTMENT.

DIVISION G.—Steam engineering and shops.

SIR: The following is a summary report of work done at the district pumping station during the fiscal year beginning July 1, 1913, and ending June 30, 1914:

Water pumped, figured from plunger displacement:

First high service.....	6,233,559.000
Second high service.....	2,253,845.000
Third high service.....	714,096.000
Total.....	9,201,500.000

Coal burned.....	tons..	5,683
Cylinder oil used.....	gallons..	510
Engine oil used.....	do.....	968
Grease used.....	pounds..	347
Waste used.....	do.....	925

The regular force employed for the operation of the pumping engines, boilers, and auxiliaries, cleaning of machinery, etc., is as follows:

	Steam engineers.	Assistant steam engineers.	Firemen.	Oilers.	Cleaners.	Laborers.
Sunday.....	3	3	3	4	4	4
Week days.....	3	3	3	4	4	4

For the fourth high service the water is pumped from the Reno Reservoir (which is supplied by the third high-service pumps) to an elevated tank by gasoline engines and triplex pumps. This machinery is operated daily by the watchman in charge of the reservoir, and one assistant on night duty. The water pumped for this service during the year is 54,900,475 gallons, or a mean of 150,000 gallons daily.

During the early part of the fiscal year work was completed at the Anacostia station and the engines and pumps were started on regular service September 29, 1913, pumping to the three water towers supplying the area east of the Anacostia River. This station is taken care of by two men.

The water pumped from September 29, 1913, to June 30, 1914, figured from plunger displacement, follows:

First high service.....	83, 086, 800
Second high service.....	3, 602, 172
Total.....	86, 688, 972

Or a mean of 316,000 gallons daily.

The work accomplished during the year is as follows: All necessary repairs for the machinery at the District pumping station, fourth high service, and Anacostia stations; repairs to automobile trucks, etc.; made practically all repair parts for fire plugs, valves, street hydrants, etc., including all tools used on the work of laying water mains, etc., such as picks, chisels, breakers, caulking tools, yarning irons, valve keys, wrenches, pipe bands, eyebolts, arch irons, and miscellaneous tools and appliances as required for the various work; erected machinery at Anacostia station; made 48-inch pipe cutter; repaired dirt rammer and pipe-cutting machines; made new bearings for printing press for water register; made 3 gasoline tanks for engines at Anacostia; repaired Avery coal scales; fitted up valve operators and installed same at First and B Streets and New Jersey Avenue and L Street; made repairs to Cogswell fountain; rebuilt 1 automobile; took crane trolley apart for shipment; made repairs to elevators; repaired Crowe stokers; put new tubes in boilers as necessary; repaired diaphragm pumps; repaired heating system, drinking and horse fountains; fitted up battery of meters at First and K Streets NE.; built concrete vault at New Jersey Avenue and L Street; made tools and erected Hendey lathe and boring mill in shop; erected hoist in machine shop; built twenty-seven 3-way and eighty-four 4-way valves, 6 and 8 inch bells, two hundred and two 8-inch and four hundred and forty-two 6-inch 2-way gate valves; repaired valves as follows: Ten 3-inch, forty-seven 4-inch, twenty-one 6-inch, twenty-three 8-inch, two 12-inch, fourteen 3-way, eleven 4-way, one 20-inch, five 24-inch, and two 30-inch, total, 136 valves; repaired 12 McClelland fire hydrant standpipes; reversed bells on 54 fire hydrants; tested 2 of each shipment of valves for interchangeability; drilled and tapped 305 pipe bonnets; drills 137 pairs of pipe bands; bored out 12 street-hydrant knobs; made 816 air valves for fire plugs; machined 50 waste valves for fire plugs; made 12 nozzles for fire plugs; made 66 brass operating screws for valves of various sizes; bored and tapped forty-four 4-inch plugs for blow-off connections; cut pipe and nipples for storekeeper; put handles in dirt rammers; repaired 24 Buckeye burners; repaired 1,818 water meters; repaired and sharpened Smith cutters and paper-cutter blades; and completed numerous small jobs necessary for the expedition of the work of the department.

During the year all composition metal castings for valve work, repair parts, etc., have been made in our foundry, which has been operated without interruption; there were made in the foundry 145 aluminum street signs and brass hangers for the electrical department.

The blacksmiths have made 52 curb and extension keys, 210 new chisels, 136 caulking sets, 117 meter-box keys; made and sharpened 251 drills; repaired 386 stakes; sharpened 7,320 chisels and 11,972 picks, and welded new ends on 982 picks; repaired 115 curb and extension keys; made and repaired 19 frost pins and 70 casing hooks; made 50 breakers, pipe hangers, and bolts; repaired 98 tunneling bars; made 137 pair of pipe bands of various sizes; made irons for new tool wagons, hook rods and plates, tongs, angle irons, drift pins, wrenches, tappets for fire plugs, yarning irons, swedges; repaired lawn mowers; sharpened mattocks; and made repairs to wagons and automobiles.

The carpenters have built office for storekeeper, bins in storeroom and basement, and racks for stationary room; built tool wagons; repaired watch boxes;

made ladders and tripod derricks; made work assignment board, scaffolding for janitor; repaired sash and roof in boiler room; repaired roof of station; built tool chests, map cases, drawing boards, cardcases, bookcases, desks, battery boxes, forms for concrete work; built concrete vault for exhaust pits at Anacostia; made forms for Venturi meter pit, at Fourth and Bryant Streets; laid concrete floor at Anacostia; built storage house for iron; built racks and trough for blue-printing room; repaired brick pier in stable yard; repaired gates and floors in west yard; made concrete anchors for cranes; built chimneys and repaired roof in blacksmith shop; repaired stalls and floor in stable; repaired skylight in Reno tower; made one thousand five hundred and eighty-eight 8-inch cement rings, six hundred and thirty-seven 4-inch cement rings, five hundred and ninety-nine sectional rings; filled 971 casing covers; roughed 886 casing covers; filled eighty-seven 24-inch manhole covers; and made twenty-nine 3-foot rings.

The painters have painted crane, engines, and pumps at Anacostia, auto trucks and wagons, shelving and office storeroom, mixed color for fire plugs, painted crane at Bryant Street station, painted water main on Aqueduct Bridge, pipe at Benning and College Pond, pipe at K Street and M Street Bridges, cleaned and painted pipe on Pennsylvania Avenue Bridge, painted motor and pipe in pump pit at Union Station, painted interior of leak house, varnished doors and painted sash, balcony, and girders at Bryant Street station, painted bridge at Langdon, painted fences around yard at Bryant Street Station, Reno, and Anacostia, and three water towers; painted woodwork at Brightwood lodge, Reno, and Anacostia stations; filled and varnished instrument boxes, cabinets, desks, and battery boxes; replaced necessary window glass, covered steam piping with asbestos, lettered oil cans, assignment board, signboards, number boards, map holders, and made and repaired curtains and cushions for wagons, autos, and buggies.

The electricians and helpers have taken care of generators, switchboards, motors, lights, etc.; operated conveyor, economizer scrapers, and crane; tested and charged batteries, repaired electric fans, installed conduits and wiring for lights in basement and storeroom, crane, meter pit at Fourth and Bryant Streets, lights in blacksmith shop, and connected motors for boring mill and lathes; installed switchboards at Anacostia and Bryant Street stations, made repairs to telephones, tamping and pipe-drilling machines; wired autos, installed signals on elevators, soldered oil cans, etc.; installed ventilating apparatus at Union Station pump pit, and made repairs to gauges on water towers; repaired storage batteries.

The janitor and his force have taken care of all cleaning throughout the building, removing shavings from the wood-working shop; turnings, scrap, and other debris from the machine shop, attended to the window cleaning, water coolers, messenger service to the office, etc.

Respectfully submitted.

JAS. T. FINK, *Chief Steam Engineer.*

The SUPERINTENDENT, WATER DEPARTMENT.

TABLE I.—*Statement of cash account of the water fund, District of Columbia, for the fiscal year ended June 30, 1914, as shown by the books of the auditor of the District of Columbia.*

Balances July 1, 1913:		
In Treasury of the United States.....	\$54,033.08	
In hands of the disbursing officer, District of Columbia	7,000.00	
In hands of collector of taxes, District of Columbia	185.21	
		\$61,218.29
Receipts:		
Water rents.....	646,296.15	
Taps and stopcocks.....	6,118.20	
Water main assessments, principal.....	81,314.34	
Interest on same.....	5,064.87	
Sale of old material.....	4,253.20	
		743,046.76

Repayments:

Cash—		
Salaries, revenue and inspection branch, 1914	\$0. 83	
Salaries, distribution branch, 1913	19. 83	
High service, 1913	42. 06	
High service, 1914	5, 247. 23	
Transfer vouchers—		
Salaries, distribution branch, 1913	5. 51	
Salaries, distribution branch, 1914	51. 33	
High service, 1914	18, 764. 58	
Contingent expenses, 1913	. 27	
		\$24, 131. 64
		<u>828, 396. 69</u>

Expenditures:

Appropriations, 1914—		
Salaries, revenue and inspection branch	31, 100. 00	
Salaries, distribution branch	50, 499. 54	
Contingent expenses	4, 358. 73	
General expenses	31, 434. 10	
High service	650, 163. 34	
Refunds	1, 993. 90	
Reimbursement to the United States on account appropriations for the extension of water mains	20, 000. 00	
		789, 549. 61
Appropriation, 1913:		
Contingent expenses	482. 52	
General expenses	4, 881. 03	
High service	39. 00	
		5, 402. 55
Total cash expenditures for the year		794, 952. 16
Balances June 30, 1914:		
In Treasury of the United States	24, 907. 98	
In hands of disbursing officer, District of Columbia	8, 136. 54	
In hands of collector of taxes, District of Columbia	400. 01	
		33, 444. 53
		<u>828, 396. 69</u>
July 1, 1914:		
Balance to credit as above	33, 444. 53	
Transfer from surface department made after June 30, 1914	1, 050. 90	
		34, 495. 43
Outstanding liabilities close of business June 30, 1914	27, 209. 10	
Unexpended balances of appropriations for 1913 and 1914 not available for 1915 expenditures	6, 339. 70	
Balance available July 1, 1914	946. 63	
		34, 495. 43

TABLE 11.—Cost of work done by the water department during the year ended June 30, 1914.

	Heads of expenditure.	Per diem and salaries.	Material expended.	Total expenditures.	Charge to general account.				
					New work.	Operating expenses.	General repairs.	Replacement of old work.	Transportation account.
1	Pitometer division (detection of leaks).....	\$32,053.37	\$6,559.63	\$38,613.00	\$3,305.29	\$35,307.71			
2	Water mains laid.....	61,739.78	137,921.09	199,710.87	199,710.87				
3	Street hydrants and fountains erected.....	346.43	357.07	58,519.24	703.50				
4	Replacement of fire hydrants, valves, casings.....	16,885.94	41,633.30	58,519.24		12,517.34	\$134.90	\$58,384.34	
5	Maintenance and repair of valves.....	7,216.63	6,248.96	17,165.38		3,237.62	4,608.04		
6	Maintenance and repair of fire hydrants.....	7,216.63	3,426.60	10,643.23		2,419.58	5,974.51	994.30	
7	Maintenance and repair street hydrants and fountains.....	6,257.92	3,130.47	9,388.39			22,781.77		
8	Leak service.....	17,737.63	5,044.14	22,781.77					
9	Maintenance and repair of reservoirs.....	2,887.98	6,631.41	3,513.39		3,078.25	441.14		
10	Care of grounds.....	8,918.03	2,114.12	11,032.15		11,032.15			
11	Department stables and transportation account.....	30,157.00	5,513.69	35,671.29					\$35,671.29
12	Operating and repair of pumps, Bryant Street station.....	24,765.52	25,045.21	49,810.73		43,615.62	6,195.11		
13	Operating and repair of pumps, Reno station.....	1,801.27	840.23	2,641.50		2,512.93	128.57		
14	Operating and repair of pumps, Anacostia station.....	2,868.66	3,604.11	5,751.80		5,017.34	734.46		
15	Care of District pumping station.....	9,760.07	3,604.11	13,364.18		11,838.07	1,526.11		
16	Replacement work; lowering mains, etc.....	4,553.33	7,262.72	7,262.72			7,262.72		
17	Shopwork.....	28,582.65	25,917.63	54,500.28	54,500.28				
18	Buildings and extensions.....	4,684.64	6,911.64	11,596.28	10,673.76		922.52		
19	Deposit work.....	3,996.48	9,266.80	13,263.28	13,263.28				
20	New equipment and machinery.....	1,385.54	6,986.76	8,372.30	8,372.30				
21	Anacostia pumping station.....	3,006.55	7,122.73	10,129.28	10,129.28				
22	Miscellaneous items, tools, etc.....	340.79	671.99	1,012.78		1,012.78			
23	Installation of meters, maintenance and repair thereof.....	43,470.64	60,139.56	103,610.20	86,242.91	13,692.84	3,674.45		
24	Office of the water registrar.....	54,314.08	4,999.18	59,313.86		59,313.86			
25	Inspection and repairs to services.....	39,477.23	3,291.05	42,768.28		158.70	42,609.58		
26	Installation of new services.....	1,955.55	1,196.56	3,155.11					
27	Tapping water mains.....	5,962.78	1,761.78	7,724.56					
	Gross expenditures.....	424,282.17	\$77,743.18	802,025.35	397,781.14	204,754.79	97,176.77	66,641.36	36,715.29

SUMMARY.

Expenditures:	Charged to—		Per cent.
	New work.....	Operating expenses.....	
Per diem pay rolls.....	\$342,683.47		51.9
Salary pay rolls.....	81,598.70		26.7
Total.....	424,282.17		12.6
Material expended.....	377,743.18		8.8
Gross expenditures.....	802,025.35		
Less transportation credit.....	35,671.29		
Net expenditures.....	766,354.06		

766,354.06 100.0

TABLE III.—Statement of the distribution system, including mains laid by the United States, the District of Columbia, and on account of repayment work.

	In service June 30, 1913.	Laid during year ended June 30, 1914.	Abandoned during year ended June 30, 1914.	In service June 30, 1914.
75-inch diameter.....linear feet..	600			600
48-inch diameter.....do.....	44,172			44,172
42-inch diameter.....do.....	23			23
36-inch diameter.....do.....	59,051	21	5	59,057
30-inch diameter.....do.....	53,227	4,784	16	57,995
24-inch diameter.....do.....	21,666	4,737	5	26,398
20-inch diameter.....do.....	97,035	1,838	5	98,868
16-inch diameter.....do.....	16,219	8	8	16,219
12-inch diameter.....do.....	350,542	9,396	240	350,698
10-inch diameter.....do.....	9,110	9	10	9,109
8-inch diameter.....do.....	675,711	69,985	731	744,965
6-inch diameter.....do.....	1,474,113	3,942	6,321	1,471,734
4-inch diameter.....do.....	151,749	2,263	1,659	152,353
3-inch diameter.....do.....	78,779	1,477	1,021	79,235
Total.....	3,031,997	98,460	10,051	3,120,406
Stop valves.....	8,618	893	209	9,302
Fire hydrants.....	3,166	506	383	3,289
Public hydrants.....	204	13	6	211
Sanitary fountains.....	11			11
Horse fountains.....	148	6	2	152
Public wells (deep).....	45		1	44
Public wells (shallow).....	9			9

TABLE IV.—Statement of the length and cost of water mains laid from July 1, 1878, to June 30, 1914, paid out of water department funds.

	In service June 30, 1913.	Laid during year, June 30, 1914.	Total laid to June 30, 1914.
3-inch diameter.....linear feet..	76,522	106	76,628
4-inch diameter.....do.....	114,036	1,546	115,582
6-inch diameter.....do.....	1,078,797	3,441	1,082,238
8-inch diameter.....do.....	627,018	66,526	693,544
10-inch diameter.....do.....	6,735	6	6,741
12-inch diameter.....do.....	309,430	9,353	318,783
16-inch diameter.....do.....	16,257	8	16,265
20-inch diameter.....do.....	86,950	1,838	88,788
24-inch diameter.....do.....	9,757	4,737	14,494
30-inch diameter.....do.....	15,653	4,784	20,437
36-inch diameter.....do.....	36,291	21	36,312
42-inch diameter.....do.....	23		23
48-inch diameter.....do.....	14,309		14,309
Total.....	2,391,778	92,366	2,484,144

Total cost to June 30, 1913.....\$3,384,601.44
 Total cost for year ended June 30, 1914.....199,710.87

Aggregate cost to June 30, 1914.....3,584,312.51

TABLE V.—Statement of the average cost per foot for laying water mains for the year ended June 30, 1914.

	Linearfeet.	Cost for labor per linear foot.	Cost for material, cuts to pavements, etc., per linear foot.	Total cost per linear foot, laid.
4-inch.....	1,093	\$0.470	\$0.840	\$1.310
8-inch.....	61,138	.414	.926	1.340
12-inch.....	9,149	.659	1.575	2.234
20-inch.....	1,820	1.107	2.518	3.625
24-inch.....	4,687	1.746	3.840	5.586
30-inch.....	4,765	1.736	4.603	6.339

NOTE.—Excessive cost of 4-inch mains due to having been laid in short sections in alleys, necessitating additional cost.

REPORT OF THE SUPERINTENDENT OF SEWERS.

WASHINGTON, D. C., September 18, 1914.

SIR: I have the honor to submit the following report of the sewer division, engineer department, District of Columbia, for the fiscal year ending June 30, 1914:

DIVISION A.—*Drainage studies, plans, engineering data.*

Studies on the future development of the sewerage system for a number of new trunk lines, as well as important extensions, included during the year sanitary drainage for the upper Potomac areas to and including the valley of Falls Branch, where plans have been developed for the diversion of all of this sewage, now discharging through the Government reservation at the Dalecarlia Reservoir, into the State of Maryland, around the easterly border of the reservoir to the sewage-disposal system of the District of Columbia and connection at Chain Bridge with the proposed upper Potomac interceptor. In the upper valley of Falls Branch drainage studies were developed to provide for all territory as far as the District line at Wisconsin Avenue and eastward therefrom. In the upper Rock Creek Valley drainage studies were completed for areas north of Broad Branch Road on the west and for the area northward from Luzon Avenue on the east, as well as for the main interceptor system in this valley to the District line. Drainage studies in the Anacostia River Valley included a study of substantially the entire area from Bennings to the District line on the east, and on the west studies for the northerly portion of Brookland, for Woodridge, and adjacent subdivisions. The plans for the development of the combined system of sewerage included areas in Rock Creek and Piney Branch Valley, as well as trunk outlets and connections along the upper Potomac and along both sides of the Anacostia River in connection with the river improvement, where studies have been completed for all outlets as far as Bennings Bridge.

Plans for the sewerage system were prepared for storm drainage works along the Anacostia River as far as Massachusetts Avenue in connection with the Anacostia River improvement, as well as permanent outlets for the Northeast Boundary sewer and the B Street SE. sewer. Sections of the Fillmore Street, Fourteenth Street, Twelfth Street, and Kentucky Avenue outlet mains and of the Piney Branch, Barry Place, and Illinois Avenue trunk sewers were planned and built, as well as sections of relief storm sewers, the most important being the Maryland Avenue storm-water diversion, construction on which was nearly completed at the close of the year.

Plans for the sewage-disposal system included new sections of the Rock Creek main interceptor as far north as Boulder Bridge, including tunnels Nos. 2 and 3, the Anacostia main interceptor to Bennings Road, the upper Potomac interceptor through K Street in Georgetown, along the Chesapeake & Ohio Canal to Foundry Branch, and thence via the Canal Road to Chain Bridge; detail plans for the Poplar Point pumping station and its equipment, including the superstructure, were in progress. Plans were completed for the preliminary treatment of sewage at the United States Asylum for the Insane, as well as plans for the diversion of all sewage from this institution into the interceptors of the disposal system.

The engineering data for the year included rainfall, run-off, and river flow record, as well as examinations of the river bottom in the Potomac for many miles below the sewage outfall to detect any evidence of sludge deposits. Bacteriological examination of the streams entering the District to ascertain the degree of their pollution by sewage from adjacent Maryland towns was continued during the year, and the results of these examinations are given in tabular form hereafter.

A sanitary survey of the Potomac River by the United States Public Health Service was in progress during the year. As this survey included oxygen determinations, the similar work of this department was suspended to avoid expenditure for duplicate work, so that no oxygen tests are available for this report. All assistance possible in the way of transportation was given to the Public Health Service in connection with this survey.

RAINFALL AND RUN-OFF.

Data for run-off studies included rainfall record from 3 automatic recording and 21 ordinary gauges, distributed over 50 square miles of area, as well as discharge and flow-line determinations for excessive storms in a number of the main drainage lines.

The storm of greatest intensity for the year occurred on July 30, 1913, beginning about 3.10 p. m. and lasting about 30 minutes. During this interval, in the northwest section, more than 1½ inches of rain fell in 20 minutes. The storm was accompanied by winds of extraordinary velocity, doing considerable damage to buildings and breaking off the branches of many trees. The number of cases of street flooding due to this rainfall was greatly increased by the washing of branches of trees across the front of storm-water inlets, so as to obstruct or partially obstruct same.

The following tabulations give the details of the precipitation for this storm, as well as the record for the four other excessive storms of the fiscal year:

Tabulation of the total observed rainfall for the five excessive storms of the fiscal year 1914 as recorded at 24 stations.

Station.	Location.	Date.				
		1913			1914	
		July 30.	Aug. 1.	Aug. 29.	June 25.	June 28.
No. 1.....	Weather Bureau.....	2.02	1.77	1.48	1.23	2.95
No. 2.....	Scale house, First and O Streets SE.....	.65	1.65	1.42	1.15	1.74
No. 3.....	Boundary sewer gatehouse, Twenty-first and A Streets NE.....	1.00	2.00	1.90	.84	1.96
No. 4.....	Kiosk, Pennsylvania Avenue and Thirteen-and-a-half Street NW.....	1.59	1.90	1.59	1.50	2.89
No. 5.....	Great Falls, Md.....	.02	.88	1.23	.65	1.68
No. 6.....	Receiving reservoir, Conduit Road.....	.53	1.15	1.73	1.17	2.28
No. 7.....	Pumping station, Rock Creek and Massachusetts Avenue.....	1.62	1.10	1.50	1.32	2.68
No. 8.....	Filtration plant.....	2.20	.92	1.48	.72	2.38
No. 9.....	Tenleytown, Warren Street and Wisconsin Avenue.....	1.20	.75	1.00	1.05	3.10
No. 10....	Georgetown, Dent Place and Thirty-fifth Street.....	1.45	1.05	1.40	1.62	2.88
No. 11....	Zoo bird house.....	1.60	.70	1.30	1.40	2.90
No. 12....	Seventeenth and U Streets NW.....	2.00	1.15	1.55	1.12	2.50
No. 13....	Seventeenth and K Streets NW.....	1.90	1.80	1.68	1.35	2.70
No. 14....	Brightwood, Georgia Avenue and Nicholson Street.....	2.10	.62	1.10	1.07	2.38
No. 15....	Park Road and Holmesd Place.....	1.95	.72	1.68	.52	2.72
No. 16....	Tenth and G Streets SW.....	1.85	1.98	1.35	1.52	2.08
No. 17....	New York Avenue and New Jersey Avenue.....	3.00	1.60	1.70	.....	.....
No. 18....	Delaware Avenue and C Street NE.....	1.20	2.05	1.70	.48	2.68
No. 19....	North Carolina Avenue and Seventh Street SE.....	1.82	2.10	.....	.....	.....
No. 20....	Brookland, Twelfth and Monroe Streets NE.....	1.20	1.10	1.55	.58	2.88
No. 21....	Thirteenth Street and Maryland Avenue SE.....	1.40	1.82	1.75	1.25	1.70
No. 22....	Bennings, Minnesota Avenue and Gault Place NE.....	1.35	1.50	1.75	.72	.....
No. 23....	Anacostia Fourteenth and V Streets SE.....	1.92	1.88	.95	1.05	2.38
No. 24....	Congress Heights, Fourth Street and Nichols Avenue SE.....	1.45	1.75	.58	.40	2.60

Rainfall of July 30, 1913 (began 3.10 p. m.).

[Depth of precipitation (in inches) at time indicated.]

Gauge.	3.10	3.15	3.20	3.25	3.30	3.35
No. 1.....	0	0.52	1.21	1.51	1.56	.....
No. 2.....	0	.00	.03	.09	.15	0.22
No. 3.....	0	.05	.12	.22	.32	.43

Rainfall of July 30, 1913 (began 3.10 p. m.)—Continued.

MAXIMUM RATE.

[Rate of precipitation (in inches per hour) during periods of time indicated.]

Gauge.	5 minutes.	10 minutes.	15 minutes.	20 minutes.
No. 1.....	6.24	7.26	6.04	4.68
No. 2.....	.72	.78	.72	.72
No. 3.....	1.20	1.20	1.24	1.20

MAXIMUM PRECIPITATION.

[Depth of precipitation (in inches) during periods of time indicated.]

Gauge.	5 minutes.	10 minutes.	15 minutes.	20 minutes.
No. 1.....	0.52	1.21	1.51	1.56
No. 2.....	.03	.09	.15	.22
No. 3.....	.07	.17	.27	.38

The precipitation, by months, for the fiscal year was recorded as follows:

1913.	Inches.	1914.	Inches.
July	3.24	January	4.60
August	5.42	February	2.95
September	2.41	March	2.27
October	3.37	April	3.20
November	2.20	May	1.72
December	2.29	June	6.20
		Total	39.87

RIVER FLOW AND SEWAGE DILUTION.

The outfall of the sewage-disposal system, opposite Grimes on the Potomac River, where substantially the entire sewage of the District of Columbia is discharged in mid-channel at the river bottom, was under observation during the year. The conditions in the neighborhood of the outfall continued excellent, while examinations of the river bottom show no evidence of sludge deposits for a distance of 60 miles below the sewage outlets, while the shores and beaches were free from any objectionable condition as to odor, deposits, or otherwise, and the surface of the river substantially free from oily sleek or other objectionable floating matter.

The following is a tabulation of the flow of the Potomac River for each month of the year, together with the average discharge through the outfall. The latter includes considerable storm water, ground water, and stream flow from suburban areas, as well as all leaks and wastes of the water supply system. The actual ratio to river flow is given in this tabulation as well as the ratio of effective dilution obtained.

River flow and sewage dilution.

Month.	River discharge (second-feet).			Average pumpage (second-feet).	Ratio to river flow.	Effective dilution.
	Maximum.	Minimum.	Mean.			
1913.						
July.....	11, 625	3, 925	6, 230	97	1:64	128:1
August.....	6, 950	2, 100	4, 041	101	1:40	80:1
September.....	4, 862	988	2, 265	95	1:24	48:1
October.....	54, 000	2, 321	8, 771	94	1:93	186:1
November.....	66, 500	4, 162	16, 099	88	1:183	366:1
December.....	30, 250	5, 288	10, 123	84	1:121	242:1
1914.						
January.....	56, 625	10, 500	25, 179	90	1:279	558:1
February.....	49, 125	7, 325	20, 100	94	1:214	428:1
March.....	84, 250	7, 138	24, 243	89	1:272	544:1
April.....	65, 500	11, 738	26, 362	93	1:284	568:1
May.....	29, 250	4, 050	12, 226	94	1:130	260:1
June.....	6, 150	2, 775	4, 107	100	1:41	82:1

During the past 12 months the river flow has fallen below 1,000 second-feet on 1 day, below 1,600 second-feet on 3 days, below 1,800 second-feet on 10 days, below 2,000 second-feet on 16 days, and below 2,200 second-feet on 20 days. The minimum flow was 988 second-feet, on September 15, 1913, and the maximum flow was 84,250 second-feet. The mean flow for the year was 13,312 second-feet. The minimum flow for this year was 988 second-feet, as compared with 2,175 second-feet for the preceding year, but it is to be noted that this unusual minimum flow was for 1 day, and that on the immediately preceding and succeeding days the flow was 1,735 and 1,850 second-feet respectively.

SANITARY SURVEY OF THE POTOMAC RIVER.

In connection with the general statement of the conditions of the Potomac River, so far as the discharge of sewage therein is concerned, it is proper to record that the sanitary survey of the river by the United States Public Health Service was in progress during this fiscal year. It is understood this survey has been substantially completed and that the report is in preparation. Great importance is attached to the results of this survey, particularly in determining the question of the self-purification of river waters, as well as an authoritative statement of local conditions in the Potomac such as will indicate future procedure by the District of Columbia in dealing with the problem of sewage purification.

METROPOLITAN SEWERAGE DISTRICT.

In connection with the general project requiring the removal of sewage now discharging from adjacent Maryland towns into the small streams entering the District of Columbia through the park system, work was continued during the year on a study of the condition of these streams with a view to recording their present pollution, as furnishing important data for future action by the District of Columbia to correct this serious condition. The pollution of these streams is now very apparent and is steadily increasing. The subject has been made the matter of a special and thorough investigation by the State Department of Health of Maryland and its bureau of sanitary engineering, and a comprehensive report on this subject was submitted by the latter on February 3, 1914, to the sewage commission of Montgomery and Prince George Counties, a commission appointed by the governor to consider plans for remedying these existing conditions. It is understood that the commission submitted to the Maryland State Legislature which met in January, 1914, a bill providing for the creation of a sanitary district embracing the State area adjacent to and draining into the District of Columbia, but that no action was taken by the legislature toward enacting this bill. Until sufficiently comprehensive action is taken by the State of Maryland on this subject no definite recommendation can be made for action by the District of Columbia to secure the abatement of these conditions, which within a comparatively short period, it is believed, will constitute a nuisance.

Attention is invited again to the portion of my annual report for the fiscal year 1909, relating to this subject, from which the following is abstracted:

"The only practical solution of this problem is believed to be in the formation of a metropolitan district under the control of a State and National board, with power to construct the necessary valley interceptors for the removal of the sewage, and that these interceptors be arranged so as to discharge at the State line into the interceptors of the sewage-disposal system of the District of Columbia, the District to be reimbursed for the cost of pumping and handling the sewage from the Maryland towns and villages by a State-collected tax levied upon the communities benefited, which would also defray the cost of construction and maintenance of the State system."

The interests of the District are so immediate and the conservation of the purity of these streams so important as a measure of protection to these national parks that, in the interest of public health and sanitation, it is important that some adequate remedy be applied, such as is suggested in the foregoing paragraph, without great delay.

Also, in this connection, attention is invited to the fact that during this year the following towns bordering on and draining into the streams flowing through the District of Columbia have, it is understood, secured authority for the issue of bonds for the construction of sewerage systems: Rockville, in Montgomery

County; Kensington, in Montgomery County; and Mount Rainier, in Prince George County. That these systems will be important factors in the near future in stream pollution may be indicated by the fact that the authorized issue of bonds for the sewers, it is understood, is more than \$150,000.

Report of Maryland State Department of Health.

The following is abstracted from the report of the bureau of sanitary engineering, State Department of Health, Maryland, entitled "The collection and disposal of the sewage of those sections of Maryland adjacent to the District of Columbia," dated February 3, 1914, viz:

"For several years it has been evident that a number of the streams entering and passing along the borders of the District of Columbia have been polluted by sewage from communities in Maryland lying near the District boundary line. Attention to this condition has been drawn by its mention in the yearly reports of the engineer department of the District of Columbia, and a movement to remedy the situation, for the protection of the welfare of those living within the city of Washington, has been urged.

"Owing to the rapid growth of population in the Maryland suburban territory, this pollution is fast increasing, and there is every prospect of a still greater increase in the near future on account of the fact that a number of the communities are taking steps at the present time toward installing sewerage systems. Even now conditions in some of the streams are almost intolerable.

"*Condition of streams.*—Little Falls Brook is the most badly polluted of any of the streams under consideration. Near its headwaters in Chevy Chase it receives gross pollution from the improperly operated irrigation field belonging to that community. Its condition at certain times of the year—particularly in summer, when the stream flow is small—is almost intolerable. Both bed and banks are coated with filthy slime and rank organic growth caused by the entering sewage. At times it is no better than an open sewer, and where it passes under the Rockville Road is particularly objectionable to the public. Just below this point an attempt has been made to remove the stream from view by inclosing it in a large terra-cotta pipe for a short distance; but this has failed to serve the purpose for which it was intended, and a filthy pool has been formed at its upper end.

"Kensington Branch drains the greater part of the town of Kensington and receives the effluent and probable overflow from the present Kensington sewage disposal field. It is a highly polluted stream, passing along the line of the Kensington Electric Railway, and in summer is most offensive. The large amount of water flowing in Rock Creek, however, affords sufficient dilution to the sewage entering at this point, and therefore the creek is not objectionable as to appearance or odor.

"The worst condition in the entire drainage area of the Anacostia River exists on Sligo and Takoma Park Branches below the so-called sewage-disposal plants of Takoma Park. From Silver Spring some pollution reaches Sligo Branch through the small stream draining the community, but it has no noticeable effect. Not until the disposal plant is reached does the condition of Sligo Branch become offensive. The sand filters at this point have been examined on several occasions and show the effect of gross neglect. At the time of one examination sewage was being permitted to discharge upon one of the beds, but instead of passing through the sand it was flowing through a hole in the center of the bed directly into an underdrain and thence to the stream. At another time even this pretense at treatment was not being made, for the sewage was entirely shut off from the beds and was discharging directly into the stream by means of a ditch. The conditions existing at this latter time were almost indescribable. The amount of upland flow was small and the contribution of sewage large, so very little dilution was afforded, and the odor from the putrefying organic matter was sickening."

Stream pollution.

As an indication of the present pollution of these streams the following is a tabulation of the bacteriological determinations from samples collected by this department at or near the District line, and are from results furnished by the

hygienic laboratory of the United States Public Health Service, to which acknowledgments are due for this work:

Bacteriological survey of streams, showing total bacteria and B-coli per c. c. in analysis of samples taken from streams as located.

Month.	Rock Creek at north end of Rock Creek Park.		Chevy Chase branch at Brookville Road.		Little Falls branch at Wisconsin Avenue.		Anacostia River at District Line.	
	Total.	B-coli.	Total.	B-coli.	Total.	B-coli.	Total.	B-coli.
1913.								
July 1.....	9,000	1	5,800	100	156,000	10,000	149,000	1,000
July 8.....	38,500	100	60,000	1,000	1,100,000	10,000	5,900	10
July 22.....	3,000	10	11,900	100	500,000	10,000	27,000	1,000
July 29.....	6,700	10	8,000	10	175,000	1,000	8,300	10
Aug. 5.....	5,000	1	13,100	1,000	1,910,000	10,000	9,500	1,000
Aug. 20.....	38,400	1,000	87,000	1,000	1,965,000	10,000	8,300	1,000
Aug. 27.....	4,300	10	165,000	100	635,000	10,000	2,900	1,000
Sept. 4.....	3,300	10	32,500	1,000	750,000	10,000	11,300	10,000
Sept. 9.....	1,700	100	22,800	1,000	79,500	10,000	1,900	100
Sept. 17.....	350	100	10,500	100	160,000	1,000	5,000	1,000
Sept. 25.....	1,200	10	31,000	1,000	780,000	1,000	8,700	1,000
Sept. 30.....	850	10	30,800	10	2,650,000	10,000	32,500	100
Oct. 7.....	400	10	43,800	1,000	165,000	10,000	5,500	100
Oct. 15.....	2,000	10	5,000	100	125,000	10,000	3,800	100
Oct. 22.....	4,400	100	17,600	1,000	185,000	10,000	9,300	100
Oct. 29.....	14,000	10	6,500	1,000	45,000	1,000	1,850	100
Nov. 5.....	700	10	3,300	100	80,000	1,000	9,000	1,000
Nov. 12.....		100		1,000		10,000		100
Nov. 19.....	19,000	100	5,200	1,000	110,000	10,000	4,250	100
Nov. 26.....	300	100	4,300	100	100,000	10,000	3,100	1,000
Dec. 3.....	550	10	12,000	1,000	68,000	10,000	1,400	100
Dec. 9.....	600	10	5,000	1,000	107,000	10,000	1,600	100
1914.								
Jan. 7.....	1,700	10	6,900	1,000	60,000	1,000	2,900	100
Jan. 15.....	900	10	2,400	100	130,000	10,000	1,100	100
Jan. 28.....	2,200	10	23,000	1,000	59,000	10,000	3,500	100
Feb. 4.....	1,100	10	7,800	100	102,000	10,000	2,900	100
Feb. 11.....	19,000	10	4,700	100	216,000	1,000	1,600	1,000
Feb. 26.....	700	10	8,400	1,000	358,000	10,000	13,000	100
Mar. 26.....	350	100	2,400	1,000	14,000	1,000	1,500	100
Apr. 3.....	950	100	4,900	100	22,500	10,000	1,100	10
Apr. 8.....	350	10	33,000	1,000	58,000	10,000	4,100	10
Apr. 22.....	400	10	2,000	1,000	34,000	100	500	100
May 1.....	900	10	3,600	1,000	48,000	10,000	8,200	1,000
May 8.....	3,250	1,000	9,000	100	67,500	10,000		
May 13.....	1,000	10	5,300	1,000	80,000	100		
May 19.....	200	10	900	100	30,500	1,000	5,350	100
June 2.....	1,000	1	2,700	1,000	410,000	10,000	64,000	1,000
June 10.....	1,500	1	9,100	1,000	375,000	1,000		
June 24.....	650	10	2,250	100	26,500	1,000		

DIVISION B.—Operation and maintenance, sewerage system.

The operating work for the fiscal year included the cleaning of 45,502 storm-water catchment basins, an increase of 5,259 over the work of the preceding year. The number of loads of silt removed from these basins was 7,846, an increase of 1,598 loads over the preceding year. The cost of cleaning these basins, including the cost of team haul, was \$14,322.15, against \$14,736.40 for the preceding year. The average cost of this work was 8.79 cents per basin, and the average cost per load of silt removed was \$1.31. During all but two months of the year the material from these catchment basins was removed from the city by scows and deposited, under permit from the United States Engineers' Office, as fill back of the bulkhead lines of the Anacostia River improvement between Poplar Point and Giesboro Point. The cost of loading on scows, water transportation, unloading, and grading for the fiscal year was \$2,930.92, so that the total cost of cleaning the catchment basins was \$17,257.07. This improved method of the disposal of this material at points remote from the city involves this considerable increased cost, but it is believed to be fully justified in the interest of proper sanitation.

Two hundred and twenty-nine thousand four hundred and eighty-five cubic feet of material was removed from catchment basins and sewers and 798,666 pounds was from sewage screens and incinerated.

The maintenance work of the year included the inspection of the interior of 134.22 miles of main sewers and inspection of 1,200 miles of pipe sewers. General repairs were made throughout the system on both main and pipe sewers and their condition as to maintenance was excellent. The more important repair work for the year included the construction of new concrete floor in the old B Street sewer, between Tenth and Twelfth Streets, and repairs and improvements to the Boundary sewer outlet in connection with the construction of the 55-foot discharge channel for this sewer.

The following tabulation indicates the total length of sewers at the close of the fiscal year and gives the length and the expenditure for 20 years for operation and maintenance, based on the total appropriation for this work. This tabulation indicates the reduction in annual expenditure per mile for maintenance in the past 10 years from \$123.70 per mile to \$76.30 per mile.

Year.	Length of sewers.	Appropriation for maintenance.	Cost of maintenance per mile.	Year.	Length of sewers.	Appropriation for maintenance.	Cost of maintenance per mile.
	<i>Miles.</i>				<i>Miles.</i>		
1895.....	338.30	\$45,000	\$133.02	1905.....	468.86	\$58,000	123.70
1896.....	351.55	45,000	128.00	1906.....	484.40	42,000	86.70
1897.....	369.04	50,000	135.49	1907.....	501.44	38,000	75.78
1898.....	382.78	50,000	130.62	1908.....	521.18	44,500	85.38
1899.....	394.92	50,000	126.61	1909.....	542.03	45,000	83.02
1900.....	408.09	50,000	122.52	1910.....	567.98	48,500	85.39
1901.....	421.34	50,000	118.67	1911.....	589.74	50,000	84.70
1902.....	436.89	50,000	132.76	1912.....	618.53	50,000	80.84
1903.....	448.09	58,000	129.44	1913.....	644.28	50,000	77.61
1904.....	456.87	58,000	126.95	1914.....	661.49	50,500	76.30

¹ Exclusive of sewage disposal maintenance.

There are now 661.49 miles of main and pipe sewers and 5,305 catchment basins maintained. This work includes the repairing, cleaning, flushing, and inspection of sewers and appurtenances. An accurate detail daily record of all work performed, with complete cost keeping, is maintained on the card system.

The following is a summary of the work of this division for the fiscal year, with a statement of the expenditure for each detail of the work:

Cleaning and repairing, fiscal year 1914.

Cleaning:

Main sewers cleaned.....	feet.....	1, 113
Pipe sewers cleaned.....	do.....	145, 767
Pipe sewers flushed.....	do.....	6, 339, 122
Manholes flushed.....	number.....	17, 208
Sumps, regulators, and gates cleaned and inspected.....	do.....	4, 222
Storm-water receiving basins flushed.....	do.....	18, 586
Gravel basins cleaned.....	do.....	2
Basins cleaned.....	do.....	45, 502
Basin outlets cleaned.....	do.....	65
Sludge removed—		
Pipe sewers.....	cubic feet.....	4, 079
Storm-water receiving basins.....	do.....	160, 666
Gravel basins.....	do.....	1, 890
Sediment chamber, sewerage pumping station.....	do.....	62, 856
Screens, sewerage pumping station.....	pounds.....	798, 666

Inspection and repairs:

Main sewers—

Main sewers inspected.....	miles.....	134. 22
House connections inspected and repaired.....	number.....	78
Special large connections.....	do.....	24

Inspection and repairs—Continued.

Pipe sewers—

Pipe sewers inspected	_____ miles	1, 200
Pipe sewers relaid, including basin connection	_____ feet	369
Pipe sewers abandoned	_____ do	1, 628
Settlements refilled	_____ number	8
Manholes reconstructed	_____ do	10
Manholes adjusted and repaired	_____ do	100
Manholes abandoned	_____ do	17
Manhole frames replaced	_____ do	61
Manhole covers replaced	_____ do	111

Basins—

Reconstructed	_____ number	8
Repaired	_____ do	99
Abandoned	_____ do	12
Alley grates replaced	_____ do	9
Alley frames replaced	_____ do	8

Cost:

Cleaning and inspection—

Inspecting main sewers	_____	\$1, 441. 70
Inspecting and flushing pipe sewers	_____	3, 238. 30
Cleaning main sewers	_____	364. 57
Cleaning pipe sewers	_____	3, 718. 80
Cleaning catch basins—		
City basins, iron wagons	_____ \$3, 384. 25	
City basins, tank wagons	_____ 8, 760. 74	
County basins, dump wagons	_____ 2, 181. 16	
Removal by scows—		
Loader	_____ \$987. 53	
Transportation	_____ 328. 50	
Unloader	_____ 1, 614. 89	
	_____ 2, 930. 92	
Cleaning gravel basins	_____	17, 257. 07
Cleaning and inspecting sumps, gates, and regulators	_____	204. 67
Flushing catch basins	_____	990. 01
		1, 005. 80

Repairing—

Main sewers	_____	3, 374. 69
Pipe sewers and basin connections	_____	927. 78
Abandoning pipe sewers	_____	110. 45
Filling settlements over sewers	_____	32. 83
Reconstructing basins	_____	314. 21
Repairing and adjusting basins	_____	687. 70
Abandoning basins	_____	73. 36
Replacing basin grates and frames	_____	123. 66
Reconstructing manholes	_____	519. 03
Adjusting and repairing manholes	_____	509. 56
Abandoning manholes	_____	89. 74
Replacing manhole frames and covers	_____	549. 33
Miscellaneous work	_____	530. 93

DIVISION C.—Operation and maintenance, sewerage-pumping stations, yards and shops.

Under this division is included the operation and maintenance of the main sewerage pumping station; also of substations, gates, automatic regulators, and all mechanical equipment of the sewer division, as well as the management of shops, stores, yards, floating equipment, and the installation of mechanical apparatus, as well as other special construction.

Sewerage-pumping service.—22,652 million gallons of sewage and 417 million gallons of storm water were pumped during the year. The pumping plant was continuously operated without interruption of service and receives the sewage from practically the entire District, delivering same to the outfall on the Potomac River. The fixed hydraulic levels were maintained on all classes of the pumping service.

The following is a tabulation of the quantities for each month:

Total pumpage, in gallons, for each month of fiscal year, 1914.

Month.	Sewage.	Storm water.	Month.	Sewage.	Storm water.
1913.			1914.		
July.....	1,955,012,662	38,291,616	January.....	1,918,774,990	61,086,168
August.....	2,041,139,769	119,762,640	February.....	1,764,398,400	26,658,720
September.....	1,935,233,814	8,307,288	March.....	1,839,491,332	14,137,200
October.....	2,052,974,206	3,985,344	April.....	1,908,494,702	51,960,269
November.....	1,802,183,160	9,391,140	May.....	1,546,889,834	6,732,000
December.....	1,819,300,730	33,565,752	June.....	2,068,293,150	43,353,948

Nine million three hundred and eighty-eight thousand pounds of coal were consumed, and there were used 1,582 gallons of cylinder oil, 1,440 gallons of engine oil, 116 gallons of miscellaneous oils, and 529 pounds of engine grease. Two thousand gallons of illuminating oil and 10,237 gallons of gasoline were consumed, the latter including all usage of the department during the year. One thousand two hundred and ninety-four pounds of cotton waste was used and 1,374 pounds of waste were washed and reused.

The following are the principal items of betterment for the year:

Pumping plant.—Among the minor improvements and repairs in connection with the pumping machinery were the installation of new thrust-bearing oil rings in main pumping engines Nos. 2 and 3, Class I, and the installation of new rocker arm on condenser pump of engine No. 4, Class III; also rebored high-pressure cylinder and made and installed new piston ring in engine No. 1, of Class II. Rebuilt fire-brick arches in boiler furnaces Nos. 3, 4, and 5 and front walls in ash pit under No. 5 boiler; also renewed two tubes in boiler No. 3 and one in boiler No. 2 and made and installed new valve stem in stoker engine No. 1 and repaired and painted coal tower.

Station repairs and betterments.—The installation of a 3-inch electric drainage pump and a 5-inch electric sewage pump; also the completion of the emergency electric breakdown service between the main pumping station and United States navy yard, including tablet board equipped with circuit breakers, watt meter, and switch. This connection is to provide electric current for power, lighting, and pumping in case of a breakdown of the station plant, and the equipment is so arranged as to afford a reciprocal service to the United States navy yard. Installed water meters on water supply mains to pumping station, and made and installed five improved type switches on electric hydraulic level indicators.

Substation work.—Completed excavation, foundations, and foundation walls for Poplar Point substation under contract No. 5332, at a cost of \$6,299.76. The substructure walls, gate, and screen wells, skimming tank, and sediment chamber have also been constructed and gates and other equipment partially installed. The electric hydraulic level indicators for recording substation pumping levels have been completed; these will be located on south wall of engine room of main station. Replaced submarine telephone cable from sewage pumping station across the Anacostia River to inlet chamber cut by the United States Engineers' dredge *Dalecarlia*.

Stores.—All tools and miscellaneous supplies purchased for the sewer department were received, inspected, and issued at storeroom and yards, accurate records being kept on the card system by the storekeeper and quarterly reports made covering all unexpendable property. An inventory of all property was taken at the close of the fiscal year in order to verify accounts and close records. All unserviceable property was returned to the purchasing officer for condemnation and sale.

Yard.—The water front of the sewer department yard at the foot of First Street SE. was dredged during the year to a depth of 9 feet below datum. All silt from storm-water catchment basins is placed aboard scows at this yard. An electric time stamp was installed to record team time on basin cleaning work. The following special concrete work was made at the yard during the year: 100 side basin tops, 79 corner basin tops, 390 cheek blocks, 168 drip stones, 774 linear feet of concrete semicircular pipe, 24-inch diameter; a 6-inch water supply main was installed in this yard and gutters and roadways paved.

Floating equipment.—During the year the floating equipment was employed in conveying materials removed from sediment chamber, from storm-water catchment basins throughout the city, and ashes from the pumping station, to the points of disposal; in conveying construction materials to points along the water front where sewer work was in progress, in transportation of chemists of the sanitary survey of the Potomac River, on dredging in front of sewer outlets, and in front of sewerage pumping station and sewer department yard. In the transportation of inspectors and assistant engineers. The towboat *Virginia* and the launch were overhauled and painted, various repairs were made to scows, and two work boats were constructed. Pile-driver planes were built and equipped with hammer for repair pile work. Sheet pile cofferdam at boundary sewer outlet was constructed and clamshell dredge with equipment completed. Special dredging jobs were completed in slip for loading manure for Occoquan at the foot of First Street SE., removing 400 cubic yards, and in the slip at the Ninth Street Wharf for material barges from Occoquan where 250 cubic yards were dredged, including the removal of the wreck of a large schooner, which required blasting with dynamite.

Shops.—In addition to work in connection with construction and repairs enumerated in preceding paragraphs of this division, work of the shops included all repairs to pumping and other machinery, cleaning wagons, motor trucks, and construction equipment, minor repairs for maintenance and betterment of building, and maintenance of electric lighting and power circuits. Small tools were made as follows: 88 chisels, 24 drills, 24 basin scoops, 12 hose bridges, 12 hook poles, 25 digging and pipe forms, and 130 miscellaneous tools; and small tools were repaired as follows: 4,409 picks, 95 mattocks, 721 drills, 456 chisels, 7 basin scoops, 30 axes, 28 hatchets, 60 handsaws, 31 crosscut saws, 33 wheelbarrows, 40 dirt rammers, and 139 miscellaneous tools. Five thousand seven hundred new manhole irons were made for construction work. Forms were made for 29 construction and repair jobs. Sixteen new-type basin cleaning wagons and 48 tanks for same were fitted up and painted and 8 new removable metal covers for tanks were built. One narrow-gauge gasoline motor car, 2 side-dumping cars, and 1 flat car were fitted up, and one 3-ton portable gasoline derrick completed. Also 1 deck scow was completed.

Miscellaneous construction.—Automatic sewage regulators were installed at Massachusetts Avenue and Connecticut Avenue, along the line of the Rock Creek main intercepting sewer; a 3-ton electric derrick installed at sewer department yard and bothouse at pumping station yard; also construction track laid from inlet chamber wharf to Poplar Point, and wire fence around yard erected. Also loading hopper constructed at wharf, this equipment used for the handling of construction materials in the area radiating from Poplar Point.

Miscellaneous work.—The automatic recording rain gauge was removed from the sewerage pumping station and reerected at the scale house, sewer department yard, in a more satisfactory location for correct record of rainfall. Ninety separate jobs were done in connection with sewer construction and maintenance work, costs of which are included in costs shown in the tables. Notable among this work was the reconstruction of the boundary sewer outlet, the installation of sewage regulator at Seventh and L Streets SW., 2,500-foot outlet line from the White House fountain to the bathing beach, including gate wells and controlling gates, and the construction of an automatic sewage collecting chamber on the Kenilworth trunk sewer outlet.

DIVISION D.—Construction, sewerage system.

The following is a statement of the length of pipe sewers constructed during the year and the cost of same aggregated for the several construction districts:

Section.	Length.	Cost.
	<i>Feet.</i>	
1. County west of Rock Creek.....	17,217.02	\$34,997.10
2. County east of Rock Creek.....	27,352.38	123,187.20
3. County west of Anacostia River.....	6,477.43	60,250.68
4. County east of Anacostia River.....	17,085.34	88,535.36
5. Washington City.....	14,995.54	72,782.87

The following is a detailed statement of sewers constructed in the various districts:

Western district, county west of Rock Creek.—In this area 13,251.52 linear feet of service sewers, 3,152 linear feet of service mains, and 813.50 linear feet trunk sewers were constructed, a total of 17,217.02 linear feet as follows: Foxhall Heights, 654.15 linear feet of service sewers; Potomac Heights, 4,250.43 linear feet of service sewers; and 54.50 linear feet of trunk sewers, a total of 4,304.93 linear feet; University Heights, 82 linear feet of service sewers; Tenallytown, 2,504.21 linear feet of service sewers and 31,121.60 linear feet of service mains, a total of 5,175.81 linear feet; Chevy Chase, 4,254.57 linear feet of service sewers; Cleveland Park, 560.50 linear feet of service sewers and 282 linear feet of trunk sewers, a total of 842.50 linear feet; Woodley Park, 934.40 linear feet of service sewers and 268.80 linear feet of trunk sewers, a total of 1,202.40 linear feet; Massachusetts Avenue Heights, 30.40 linear feet of service mains; Georgetown, 461.25 linear feet of service sewers and 209 linear feet of trunk sewers, a total of 670.26 linear feet. Thirty-six storm-water receiving basins were constructed in this section during the year.

Also the following miscellaneous work was done in this district: Concrete flow and outlet section for Weaver Place trunk sewer. Regulator chambers, Connecticut Avenue trunk sewer at connection with the Rock Creek main interceptor, and Massachusetts Avenue trunk sewer at connection with Rock Creek main interceptor. Screen wall and gate, Normanstone Drive outlet of trunk sewer west side Rock Creek. Three hundred and twenty-five linear feet of concrete invert on Rock Creek main interceptor under Massachusetts Avenue, where settlement of section built prior to the heavy fill at this point had occurred.

Central district, county east of Rock Creek.—The following is a summary of work in the several sections: Takoma, 959.70 linear feet of service mains and 3,031.75 linear feet of service sewer, a total of 3,991.45 linear feet; Brightwood, 1,641.90 linear feet of trunk sewer, 1,630.20 linear feet of service mains, and 2,056.27 linear feet of service sewers, a total of 5,328.37 linear feet; Petworth, 1,839.97 linear feet of trunk sewer, 901 linear feet of service mains, and 6,787.94 linear feet of service sewers, a total of 9,528.91 linear feet; Mount Pleasant, 631.65 linear feet of trunk sewer and 1,580.11 linear feet of service sewers, a total of 2,211.76 linear feet; Washington Heights, 580.10 linear feet of trunk sewer, 152.10 linear feet of service mains, and 3,214.16 linear feet of service sewers, a total of 3,946.36 linear feet; Eckington, 42.10 linear feet of service mains and 1,015.43 linear feet of service sewers, a total of 1,057.53 linear feet. Seventy-three storm-water receiving basins were constructed in this section during the year.

Eastern district, county west of Anacostia River.—In the area between North Capitol Street and Anacostia River sewers were constructed in various sections as follows: Brookland, 2,246.02 linear feet of service sewers; Langdon, 423.5 linear feet of service mains and 2,838.57 linear feet of service sewers, a total of 3,267.07 linear feet; Eckington, 151.51 linear feet of service sewers; Trinidad, 811 linear feet of service sewers. Four storm-water receiving basins were constructed in this section during the year.

Eastern district, county east of Anacostia River.—In this section east of the Anacostia River sewers were constructed as follows: Anacostia, 4,160.95 linear feet of trunk sewers and 3,389.25 linear feet of service sewers, a total of 7,550.20 linear feet; Congress Heights, 400.84 linear feet of service sewers; Bennings, 300 linear feet of service sewers; Kenilworth, 4,785.80 linear feet of trunk sewers and 4,048.50 linear feet of service sewers, a total of 8,834.30 linear feet.

The following special work was done during the year: The tide-gate chamber and stone facing was completed at the river ends of the Stickfoot Branch, Chicago Street, and Anacostia main sewer outlets.

The Fillmore trunk sewer, Good Hope Run trunk sewer and Naylor Road trunk sewer outlets were constructed from the Alexandria Branch of the Baltimore & Ohio Railroad on the east side of the Anacostia River to the established bulkhead line, Anacostia River improvement.

The Twelfth Street trunk sewer, Fourteenth Street trunk sewer, and Commodore Barney Circle trunk sewer on the city side of the Anacostia River were also extended to the established bulkhead line, Anacostia River improvement. This work was necessary in advance of the filling of the Anacostia flats by the United States Engineers' Office and completes all trunk sewer outlets between Poplar Point and the Pennsylvania Avenue Bridge.

A section of the Northeast Boundary sewer outlet channel, 232.15 linear feet and 55 feet wide, was completed during the year.

The Kenilworth outlet sewer and sewage-collecting chamber were completed and service sewers in Kenilworth built during the year.

Washington City district.—In the northwest section 31 linear feet of trunk sewers, 4,169.65 linear feet of service mains, and 802.85 linear feet of service sewers were constructed. In the southeast section 145.54 linear feet of trunk sewers, 1,081.50 linear feet of service mains, and 173.10 linear feet of service sewers were constructed. In the northeast section 3,924.05 linear feet of trunk sewers, 1,286.55 linear feet of service mains, and 1,012.50 linear feet of service sewers were constructed. In the southwest section 1,880.30 linear feet of service mains and 488.50 linear feet of service sewers were constructed. During the year 61 storm-water basins were constructed, 57 were reconstructed, and 4 were abandoned.

The following tabulation shows the construction of the sewerage system, the average cost per mile, the funds appropriated for sewer construction, and the approximate population for each year for 20 years.

Year.	Popula- tion.	Appropri- ations for con- struction. ¹	Miles con- structed.	Average cost per mile.
1895.....	255,000	\$215,619.00	13.23	\$16,290.18
1896.....	259,000	226,300.00	13.25	17,079.25
1897.....	264,000	283,947.96	17.49	16,204.87
1898.....	269,000	175,000.00	17.41	10,051.69
1899.....	274,000	158,629.30	10.18	15,582.44
1900.....	279,000	175,000.00	12.49	14,011.21
1901.....	284,000	250,000.00	13.25	18,867.92
1902.....	289,000	230,000.00	12.87	17,871.02
1903.....	294,000	170,000.00	16.42	10,353.23
1904.....	300,000	172,000.00	8.78	19,589.98
1905.....	305,000	168,650.00	11.99	14,065.89
1906.....	310,000	170,000.00	15.54	10,939.51
1907.....	315,000	333,000.00	17.09	19,485.08
1908.....	321,000	281,800.00	19.74	14,275.58
1909.....	326,000	259,500.00	18.01	14,408.66
1910.....	331,000	224,975.00	25.51	8,815.17
1911.....	341,000	219,040.00	23.18	9,449.53
1912.....	353,000	320,000.00	24.68	12,965.96
1913.....	353,000	320,000.00	23.52	13,605.44
1914.....	360,000	345,000.00	17.21	19,423.01

¹ Excluding maintenance and sewage disposal system.

SEWAGE-DISPOSAL SYSTEM.

Rock Creek main intercepting sewer.—The third section of this interceptor was constructed into the National Zoological Park as far as Adams Mill Road, and the fourth section, requiring a tunnel 2,000 feet in length, was completely excavated as far as Klinge Road and a portion of the masonry section constructed. The fifth section, consisting of 1,300 feet of tunnel and 220 feet of open-cut work, was placed under contract and 500 linear feet of the tunnel excavation completed.

Anacostia main intercepting sewer.—Section 3 of the Anacostia main intercepting sewer, extending to Pennsylvania Avenue, was completed during the year, 1,405 linear feet being constructed. A total length of 9,605 linear feet of this sewer has been completed.

Northeast-boundary sewer-outlet channel.—The most important betterment of existing trunk lines was the construction of the Northeast boundary sewer-outlet channel. As noted in the annual report for 1913, the great storm of July 14, 1912 (when more than 3 inches of rain fell in 25 minutes), completely destroyed the old paved outlet channel, the storm-water conduit, 22 feet in diameter, running 80 per cent of its full capacity. This conduit had been constructed with the spillway more than 9 feet above mean tide in the channel at the outlet, so that the hydraulic drop was nearly 20 feet in excessive storms. To afford an adequate waterway for the great volume of discharge and provide for the shock developed by this sudden fall at the outlet a heavily reinforced concrete channel was designed, 230 feet in length and 55 feet in clear width, with a submerged weir near the outer end to provide a water cushion for absorbing the energy of the fall. Incidentally, this weir furnishes means of measuring the volume of discharge. The floor of the channel is 1

foot below mean low water, and the constant level behind the submerged weir is 9 inches below mean high water. The side walls are vertical and 9 feet in height.

Plans and specifications were prepared and proposals asked for this work, but the lowest bid received was considered excessive, and to avoid the danger of delay it was decided to do the work with the department's construction force by day labor. The work was begun on November 3, 1913, and completed January 6, 1914, with no loss or damage during construction, although several considerable rains occurred, and the site was frequently flooded. The following is a statement of the cost of the work, with unit and aggregate costs, compared with the lowest bid received:

The total cost of the work by day labor, including the cost of reinforcing steel and other construction materials, purchased under contract, was \$15,973.72, while cost of this work at the unit price bid would have been \$26,336.31, so that the net saving was \$10,362.59.

Nineteen hundred and sixty-four cubic yards of concrete masonry were placed, and the cost in place, including all forms, excavation, pumping, and all incidental work, was \$7.47 per cubic yard, while the price bid by the contractor was \$12.75 per cubic yard, a unit saving of \$5.28 per cubic yard.

The cost of construction materials, including reinforcing steel, purchased under contract, was \$8,490.88.

The work was done under the following construction jobs:

Job No.	Description.	Cost.		
		Materials.	Labor.	Total.
S30	Constructing 193 feet of completed channel	\$5,922.59	\$4,467.96	\$10,390.55
S31	Constructing storm-water by-pass connecting with gate chamber of the sewage-disposal system interceptor	898.90	724.95	1,623.85
S32	Constructing 39.5 feet of completed channel, including special walls and connection with the sewer section	1,169.39	2,289.93	3,959.32

Length of main sewers and pipe sewers and number of storm-water basins constructed during the fiscal year ending June 30, 1914.

Appropriation.	Main sewers.	Pipe sewers.	Storm-water basins.
	<i>Linear feet.</i>	<i>Linear feet.</i>	
Main and pipe sewers	4,266.09	9,896.87	100
Suburban sewers	6,897.70	12,589.82	
Assessment and permit		46,148.38	
Sewage-disposal system	2,852.00		
Miscellaneous trust-fund deposits	85.00	3,917.75	35
Miscellaneous appropriations	27.00	4,615.50	41
Total	14,127.79	77,168.32	176

RECAPITULATION.

Total length of sewers on June 30, 1914:		
Main sewers	miles ..	133.57
Pipe sewers	do ..	528.00
Total	do ..	661.57
Cost of sewerage system, June 30, 1914		\$12,470,940.74
Cost of sewage-disposal system June 30, 1914		4,495,830.13
Total		16,966,770.87

DIVISION E.—Maps, records, and drafting.

Detailed drainage studies have been made under 588 engineer department files and 139 plats prepared for extensions of main and pipe sewers, for replacing defective sewers, and for receiving basins. Fifty-six files from the health office have required field work in order to determine availability of various public

sewers for house connections; also 28 files for plats showing assessment on account of connections from parcel property to the public sewers.

The record maps of sewers have been kept up to date on current construction and in posting new streets and alleys. In addition much missing data of old work has been secured from field surveys and recorded thereon. Fifty-eight maps have been repaired and bound with tape, adding greatly to the durability of these maps.

The service plats used by the public have also been kept posted with current construction, and these maps have been kept up to date by plotting thereon all new subdivisions, as well as the newly established surface grades. Seven worn sheets have been replaced and 13 new sheets covering additional territory have been added.

The 100-foot scale drainage study maps for the suburban portions of the District have been kept posted to date with current construction, new subdivisions, and newly established grades. This set of working maps has been extended by the addition of 41 new ones covering a large suburban area.

Three hundred and sixty-three slips showing proposed assessment sewers and 127 plats showing the location of all constructed assessment sewers have been forwarded to the assessor during the year.

The health officer has been notified of the construction of new service sewers when the same abutted existing houses.

The card index of new subdivisions has been continued, and 541 subdivisions listed. In connection with this index a record is kept on the posting of these subdivisions on record maps, drainage-study maps, service maps, and topographical maps; also upon the subdivision of parcel property a record is kept of any special assessment on account of existing service sewers.

Two old and worn grade sheets have been replaced and 263 new grade sheets have been made, recording the work of the year.

In order to keep in touch with the development of the water-distribution system and to secure harmonious development of the water-distribution and sewerage systems the posting of a map showing all ordered water mains has been maintained.

All street-paving schedules of the surface division, covering 396 jobs, have been carefully considered and studies prepared, where necessary, for abandoning, reconstructing, or constructing sewers in advance of same.

All surface division maps for establishing new street grades have been carefully studied with reference to their effect on the drainage of the District, and modifications have been recommended where deemed necessary.

Plans, estimates, and specifications have been prepared for sewer construction under 20 contracts.

Inspection has been continued of premises without sanitary sewers throughout the District, and 3,755 such premises have been listed. This has been done with a view of extending the sewerage system to eliminate insanitary box privies and cesspools where practicable. The following is a statement of existing premises without sewers in the several sections:

County west of Rock Creek.....	581
County east of Rock Creek.....	412
County west of Anacostia River.....	406
County east of Anacostia River.....	2,200
Washington City.....	156
Total.....	3,755

In addition to the above list, 100 premises in the various districts for which sewers are available have not as yet been connected to same.

Twenty-one plats and deeds for rights of way have been prepared in connection with the extension of the public sewerage system and all of the rights of way have been acquired. These are listed in Table No. 15, appending this report.

DIVISION F.—Records and accounts.

The work of this division consists in the preparation of requisitions and vouchers, records of cost of construction, cost keeping, preparing pay rolls, and material and equipment accounting. It included for the year 934 construction jobs, 7,445 foremen's reports, 12,240 card records, 1,417 supply bills, 559 pay rolls, 1,123 requisitions, 357 transfer and refund vouchers, 761 tool orders, 631 engineer department files, 154 letters, and 14,516 miscellaneous reports.

Sewerage system.

Cleaning and repairing sewers and basins:

Appropriation -----		\$68,000.00
Expended—		

Mechanics, laborers, and watchmen-----	\$35.85	34
Drivers and gate tenders-----	9.90	02
Inspectors and other per diem employees----	1.93	5.62
Construction material and tools-----	2.28	4.89
Repairs to equipment, equipment and supplies--	8.75	9.33
Paid surface division for repaving work-----	504.	00
Paid engineer department stables for forage, blacksmith work, etc-----	8,723.	98
		<u>67,975.18</u>

Unexpended balance-----		<u>24.82</u>
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Maintenance and operation, sewerage pumping service:

Appropriation -----		44,500.00
Expended—		

Mechanics, laborers, and watchmen-----	\$19.53	79
Inspectors and other per diem employers----	862.	00
Coal, oil, waste, and other supplies-----	22.17	60
Tools and equipment renewals-----	1,830.	53
		<u>44,406.92</u>

Unexpended balance-----		<u>93.08</u>
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Main and pipe sewers and receiving basins:

Appropriation -----		65,000.00
Expended—		

Contract construction-----	25,405.	39
Day-labor construction-----	21,559.	25
Construction material and tools-----	8,741.	40
Inspectors and other per diem employees----	4,147.	94
Paid surface division for repaving work-----	3,905.	20
Paid engineer department stable for forage, blacksmith work, etc-----	127.	06
Paid purchasing officer's office for salaries, etc--	896	83
Paid chief clerk's office for salaries-----	100.	50
		<u>64,883.57</u>

Unexpended balance-----		<u>116.43</u>
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Suburban sewers:

Appropriation -----		155,000.00
Expended—		

Contract construction-----	89.39	3.94
Day-labor construction-----	22.00	3.42
Construction material and tools-----	13,167.	33
Inspectors and other per diem employees----	7,030.	11
Paid surface division for repaving work-----	512.	38
Paid engineer department stables for forage, blacksmith work, etc-----	1,104.	95
Paid purchasing officer's office for salaries----	1,697.	61
Paid chief clerk's office for salaries-----	306.	50
Outstanding contracts and material to com- plete same-----	19,700.	00
		<u>154,916.24</u>

Unexpended balance-----		<u>83.76</u>
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130 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Assessment and permit work, sewers:

Appropriation-----	\$125,000.00
Expended—	
Contract construction-----	\$18,224.10
Day-labor construction-----	55,826.27
Construction material and tools-----	23,056.86
Inspectors and other per diem employees-----	7,493.23
Paid surface division for repaving work-----	3,187.71
Paid engineer department stables for forage, blacksmith work, etc-----	254.14
Paid purchasing officer's office for salaries, etc-----	1,494.00
Paid chief clerk's office for salaries-----	379.50
Outstanding contracts and material to com- plete same-----	15,000.00
	<u>124,915.81</u>
Unexpended balance-----	<u>84.19</u>

Sewer construction, whole-cost system:

Unexpended balance of deposits from fiscal year 1913-----	1,931.90
Amount received from various depositors, fiscal year 1914----	12,330.85
	<u>14,262.75</u>
Total received-----	
Expended—	
Contract construction-----	\$2,963.10
Day-labor construction-----	5,567.10
Construction material and tools-----	2,607.01
Paid surface division for repaving work-----	353.35
Contingent charges for supervision, engineer- ing, wear of tools, etc-----	556.19
Amount returned to depositors-----	1,054.85
Amount carried over to 1915 for completion of work-----	1,161.15
	<u>14,262.75</u>
Total accounted for-----	<u>14,262.75</u>

Sewer construction from miscellaneous appropriations:

Repayments-----	22,814.81
Expended—	
Contract construction-----	\$9,467.85
Day-labor construction-----	7,850.22
Construction material-----	4,663.89
Inspectors and other per diem employees-----	289.23
Paid surface division for repaving work-----	115.29
Contingent charges for supervision, engineer- ing, wear of tools, etc-----	428.33
	<u>22,814.81</u>
Total accounted for-----	<u>22,814.81</u>

SUMMARY OF EXPENDITURES.

Sewerage system.

Cleaning and repairing-----	\$67,975.18
Maintenance and operation, 1914-----	44,406.92
Main and pipe sewers:	
1913-----	3,081.17
1914-----	64,883.57
Suburban sewers:	
1913-----	15,322.55
1914-----	154,916.24
Assessment and permit, 1914-----	124,915.81
Permit work-----	1,886.00
Miscellaneous trust-fund deposits-----	12,046.75
Miscellaneous appropriations-----	22,814.81
Condemnation-----	<u>907.35</u>

OPERATIONS OF THE ENGINEER DEPARTMENT, D. C. 131

Outstanding contracts:

Suburban sewers, 1914	\$19,700.00
Assessment and permit, 1914	15,000.00
Total	547,856.35

The following are payments into the Treasury, on account of assessments for service sewers under the appropriations noted during the fiscal year 1914:

Main and pipe sewers	\$57.56
Suburban sewers	3,019.26
Assessment and permit work, sewers	67,181.18
Total	70,258.00

Sewage-disposal system.

Rock Creek main interceptor:

Unexpended balance from fiscal year 1913	\$37,998.88
Appropriation for fiscal year 1914	40,000.00
	77,998.88

Expended—

Contract construction	\$46,476.92
Day-labor construction	158.45
Construction material and tools	47.69
Inspectors and other per diem employees	2,105.49
Paid purchasing officer's office for salaries	60.74
Outstanding contracts and material for completion of same	29,100.00
	77,949.29

Unexpended balance	49.59
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Anacostia main interceptor:

Unexpended balance from fiscal year 1913	923.61
Appropriation for fiscal year 1914	50,000.00
	50,923.61

Expended—

Contract construction	39,761.38
Day-labor construction	4,644.62
Construction tools and material	5,080.84
Inspectors and other per diem employees	918.50
Paid surface division for repaving work	254.45
Paid purchasing officer's office for salaries	221.62
	50,881.41

Unexpended balance	42.20
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SUMMARY OF EXPENDITURES, SEWAGE-DISPOSAL SYSTEM.

Anacostia main interceptor	\$50,881.41
Rock Creek main interceptor	48,849.29
Outstanding contracts—Rock Creek main interceptor, 1914	29,100.00

Total sewage-disposal system	128,830.70
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Purchase and condemnation of land for rights of way for sewers:

Appropriation	1,000.00
Expended: Cost of rights of way, titles, and recorder fees	907.35

Unexpended balance	92.65
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Total expenditures:

Sewerage system	547,856.35
Sewage-disposal system	128,830.70
Purchase and condemnation of land for rights of way	907.35

Total expenditures during the fiscal year 1914	677,594.40
--	------------

ALLOTMENTS.

Statement of expenditures under allotments made to other departments from sewer appropriations, fiscal year 1914.

Appropriation.	Engineer stables.	Purchasing officer.		Chief clerk, engineer depart- ment.	Disburs- ing office.	Total.
		Salaries.	Sand wharf.			
Total allotments.....	\$10, 210. 13	\$4, 472. 31	\$373. 84	\$786. 50	\$384. 00	\$16, 226. 78
Expended:						
Cleaning and repairing.....	8, 723. 98	.....	.....	.....	.....	8, 723. 98
Main and pipe.....	127. 06	803. 37	93. 46	100. 50	.....	1, 124. 39
Suburban sewers.....	1, 104. 95	1, 604. 15	93. 46	306. 50	32. 00	3, 141. 06
Assessment and permit work.....	254. 14	1, 307. 08	186. 92	379. 50	352. 00	2, 479. 64
Anacostia main interceptor.....	.....	221. 62	.....	.....	.....	221. 62
Rock Creek main interceptor.....	.....	60. 74	.....	.....	.....	60. 74
Total expenditures.....	10, 210. 13	3, 996. 96	373. 84	786. 50	384. 00	15, 751. 43

Statement of expenditures under allotments from outside departments to sewer department during the fiscal year 1914.

Contingent expenses:

Total allotment.....	\$1, 171. 96
Expenditure—stationery, printing, and supplies.....	1, 171. 96

Statement of expenditures for supervision, inspection, and record on account of underground construction, public-service corporations, and the amounts charged to each of the several corporations for the fiscal year 1914.

Expenditures:

Inspection.....	\$967. 30
Supervision.....	514. 81
Record.....	265. 00
Total.....	1, 747. 11

Charged as follows:

Potomac Electric Power Co.....	876. 02
Chesapeake & Potomac Telephone Co.....	334. 40
Washington Gas Light Co.....	452. 40
Georgetown Gas Light Co.....	64. 53
Western Union Telegraph Co.....	3. 26
Washington Railway & Electric Co.....	4. 50
Capital Traction Co.....	2. 00
Miscellaneous.....	10. 00
Total.....	1, 747. 11

Statement of expenditures for per diem employees, fiscal year 1914.

Cleaning and repairing.....	\$1, 935. 62
Sewerage pumping service.....	862. 00
Main and pipe sewers.....	4, 214. 94
Suburban sewers.....	7, 220. 34
Assessment and permit work.....	7, 493. 22
Anacostia main interceptor.....	918. 50
Rock Creek main interceptor.....	2, 105. 49
Total.....	24, 750. 12

OCCOQUAN PRODUCTS.

Brick and broken stone received and issued at the sewer department yard.

Receipts—Broken stone:			
On hand July 1, 1913	-----cubic yards-----	98.53	
Received during fiscal year 1914	-----do-----	3,093.25	
Total	-----	3,191.78	
Receipts—Brick:			
On hand July 1, 1913, red brick	-----number-----	58.233	
Received during fiscal year 1914—			
Red brick	-----do-----	1,252.350	
Red paving brick	-----do-----	54,000	
Total	-----	1,364,583	
Issues—Broken stone:			
Sewer division	-----cubic yards-----	1,201.85	
Surface division	-----do-----	445.43	
Total	-----	1,647.28	
Issues—Brick:			
Sewer division	-----number-----	388.533	
Surface division	-----do-----	44,800	
Washington Asylum	-----do-----	37,600	
Fire department	-----do-----	124,600	
Public schools	-----do-----	683,100	
Industrial Home School, colored	-----do-----	2,000	
Home for the Aged and Infirm	-----do-----	1,000	
Total	-----	1,281,633	
Stock on hand June 30, 1914:			
Broken stone	-----cubic yards-----	1,544.50	
Red bricks	-----number-----	73,750	
Red paving brick	-----do-----	9,200	

FINANCIAL STATEMENT—OCCOQUAN PRODUCTS.

Amount paid collector of taxes District of Columbia:			
For brick	-----	\$7,211.93	
For broken stone	-----	1,183.88	
Cost of unloading and handling:			
Brick	-----	1,225.37	
Stone	-----	543.88	
			\$10,165.06
Balance due workhouse June 30, 1914:			
73,750 red brick, stock on hand	-----	367.80	
9,200 red paving brick, stock on hand	-----	110.40	
1,544.50 cubic yards broken stone, stock on hand	-----	1,158.37	
			1,636.57
Total	-----		11,801.63
Received for brick issued to—			
Sewer division	-----	2,337.20	
Public schools	-----	4,524.38	
Fire department	-----	809.90	
Washington Asylum	-----	244.40	
Home for the Aged and Infirm	-----	6.50	
Industrial Home School, colored	-----	13.00	
Surface division	-----	582.40	
Received for broken stone issued to—			
Sewer division	-----	445.43	
Surface division	-----	1,201.85	
			10,165.06
Unissued stock on hand, brick and stone, in sewer department yard June 30, 1914			
	-----		1,636.57
Total	-----		11,801.63

DIVISION G.—*Public-service corporations, underground construction.*

The work of this division includes determination of location for underground construction for the various public-service corporations, a supervision of the construction, field locations of same, and the mapping and recording of this work. Special study is given to securing the best arrangement of the various underground structures, particularly with a view to the economical occupation of public space. The work of the year is summarized as follows:

Permits prepared upon application-----	1,164
New record sheets made-----	1,166
Record cards made-----	1,164
New gas mains laid-----miles--	10.3
Electric duct laid-----do-----	46.3

In connection with the electric duct, 737 manholes were constructed, 103 drains from manholes to sewer were laid, and 764 houses were connected for electric light and power. One thousand four hundred and sixty-six houses were connected with gas mains. Location and record has been made of a large number of electric street lamps, served in most cases by lead-covered cables buried along the curbstone.

This division has also inspected, located, and recorded the following work:

UNITED STATES GOVERNMENT WORK.

Four hundred and eighty-seven linear feet of 4-duct and 1,386 linear feet of 8-duct conduit with 7 manholes and 6 sewer connections; 1,386 linear feet of 4-inch steam main with 3-inch return was laid; also 457 linear feet of 7 by 8 foot subway was constructed in North Capitol Street, connecting the Government Printing Office and the new city post office, under four permits.

PRIVATE CONDUITS.

One electric-conduit connection in Fourteenth Street SW. was laid to the Bureau of Engraving and Printing, one pipe line to contain speaking tubes and two steam connections were laid across alleys.

VAULT INSPECTIONS.

Applications for 39 vaults were acted upon during the year and 39 newly constructed vaults were inspected, located, and record sheets made. Record sheets were also made for 31 vaults located in previous years and for 5 old vaults located in connection with the current work.

During July and August, 1913, an inspector and skilled laborer were assigned to the work of locating old vaults in the business section of the city, and 369 vaults were located and field sketches made.

WATER DEPARTMENT CONNECTIONS WITH THE SEWERAGE SYSTEM.

Three hundred and twenty-three permits were issued to the water department for sewer connections from fire hydrants, blow-offs, street hydrants, and watering troughs, and 375 connections were inspected and recorded.

UNEXPENDED BALANCES OF APPROPRIATIONS 1901 TO 1913.

I respectfully recommend that construction appropriations for the sewerage system be made available until expended. There is no discernable advantage in the present practice of lapsing these appropriations with the fiscal year. The funds could be more effectively used if available until expended. The present practice not only entails the loss of a considerable percentage of each annual appropriation but because of this limitation the expenditure is in part, at least, uneconomical.

The following is a statement of the unexpended balances of the three principal construction appropriations from 1901 to 1913, inclusive:

Fiscal year.	Main and pipe sewers.	Suburban sewers.	Assessment and permit sewers.	Total.	Fiscal year.	Main and pipe sewers.	Suburban sewers.	Assessment and permit sewers.	Total.
1901.....	\$1,656.53	\$2,237.61	.....	\$3,894.14	1909.....	\$678.12	\$570.80	.....	\$1,248.92
1902.....	2,610.75	6,745.80	.....	9,356.55	1910.....	622.34	4,486.94	.....	5,109.28
1903.....	3,948.39	5,762.88	.....	9,711.27	1911.....	489.36	401.36	.....	890.72
1904.....	268.70	2,072.54	.....	2,341.24	1912.....	3,716.32	791.12	.....	4,507.44
1905.....	5,676.05	6,926.46	.....	12,602.51	1913.....	119.82	13.36	\$118.16	251.34
1906.....	7,177.09	4,798.30	.....	11,975.39	Total.....	31,098.08	46,660.49	118.16	77,876.73
1907.....	255.68	11,038.27	.....	11,293.95					
1908.....	3,878.93	815.05	.....	4,693.98					

Very respectfully, your obedient servant,

ASA E. PHILLIPS,
Superintendent of Sewers.

Capt. R. G. POWELL,

Corps of Engineers, United States Army,
Assistant to Engineer Commissioner, District of Columbia.

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TABLE No. 1.—Sewerage system contract

Order No.	Location.	Pipe sewer.		Main sewer	
		Length.	Size.	Length.	Size.
		<i>Feet.</i>	<i>Inches.</i>	<i>Feet.</i>	
5327	Fillmore trunk sewer to bulkhead lines.			958.81	8 by 5 feet.....
				12.3	8 feet by 4 feet 4½ inches.....
5331	Maryland Ave. and G St. NE., between 7th and 15th Sts.			827.55	Platform.....
5363	Intersection of Massachusetts and Wisconsin Aves. and in parcel 41/L.	689.00	10	1,743.75	4 feet 6 inches by 6 feet.....
				2,142.3	
5442	Between Anacostia and Pennsylvania Ave. bridges.			466.20	8 by 6 feet.....
5450	Bureau of Engraving and Printing.	995.00	12	338.77	6 by 6 feet.....
5454	Right of way between Kenilworth Ave. and Anacostia River.	1,525.50	18		
		2,618.90	18		
5484	Walter Reed Hospital, 13th and Dahlia Sts. to Elder; Dahlia, 13th to 14th.	302.90	24	451.5	3 feet.....
		1,060.00	12	206.3	2 feet 6 inches.....
5487C	12th St. SE., to established bulkhead line			80.79	6 by 6 feet.....
				4,314	Piling.....
				91.1	Platform.....
5487D	14th St. SE., to established bulkhead line.			54.75	6 by 5 feet.....
				3,240	Piling.....
				79	Platform.....
5487E	Commodore Barney Circle to established bulkhead line.			85	4 by 4 feet.....
5333	Arkansas Ave. NW., between 14th and Decatur Sts.			100	Platform.....
				680.5	
5488	Alexandria Branch B. & O R. R. to established bulkhead line.			1,132.47	9 feet 6 inches.....
5506	9th St., between Gallatin St. and Illinois Ave. and in Illinois Ave. between 9th and Kennedy Sts.			397.15	7 by 6 feet.....
				468.65	6 by 6 feet.....
				1,641.90	3 feet 6 inches by 4 feet.....
5499	Barry Place between 8th St. and Sherman Ave.	630.00	18	631.65	3 feet.....
5513	River Road from Davenport to 44th St. and in 44th St. to Western Ave.	3,121.60	18		
5517	Broad Branch Road NW., between Keokuk St. extended and McKinley St.	1,052.70	10		
5523	West of Kenilworth Ave. and south of Douglas Ave.	843.10	12		
		2,249.00	10		
		33.20	18		
5518	Conduit Road, between Chain Bridge Road and Weaver Place extended.	284.60	15		
		302.00	12		
5535	7th St. NW., between I St. and Mount Vernon Place.	1,492.43	10		
5536	Wisconsin Ave., Jenifer to Keokuk and 42d St.	368.50	12		
5441	Kling Road, through right of way, Connecticut Ave. and Macomb St.				
5524	Stickfoot Branch by-pass, Barry Farm, to the established bulkhead line—Anacostia River.				
Total.....		17,568.43		11,492.79	

¹ \$11,348 of above amount paid during 1913 is included in statement of total cost.

² \$850 paid by the Protestant Episcopal Cathedral Foundation, District of Columbia.

³ \$8,073 paid from appropriation for river improvement.

⁴ \$1,575.42 paid from appropriation "Building, Bureau of Engraving and Printing."

construction, fiscal year ended June 30, 1914.

Allowance to contractor.	Materials.		Costs.		Total cost.	Appropriation.	Contractor.
	Charged.	Not charged.	Inspection.	Pavement repairs.			
\$18,692.28	\$2,892.72	\$94.39	\$792.00	.....	\$22,471.39	Suburban, 1914.....	George Hyman.
11,594.27	2,361.48	17.42	456.00	Yes.	¹ 14,429.17	Main and pipe, 1913.	Do.
16,061.11	2,461.13	27.85	39.53	Yes.	13,589.62	Main and pipe, 1914.	Do.
1,102.31	73.22	186.27	60.00	\$13.08	² 1,434.88	Suburban, 1913.....	W. F. Brenizer Co.
12,295.03	2,249.95	167.23	431.87	.....	³ 15,144.08	Suburban, 1914.....	Do.
⁴ 1,061.01	115.85	254.94	67.00	1.60	⁵ 1,500.40	Main and pipe, 1914.	George Hyman.
6,215.78	507.60	2,245.09	234.33	.....	9,202.80	Suburban, 1914.....	W. F. Brenizer Co.
4,223.82	626.84	689.06	133.30	30.80	⁶ 5,703.82	.....do.....	Do.
2,373.63	229.99	63.88	35.62	.....	2,703.12	Main and pipe, 1914.	Do.
1,901.27	221.08	37.98	26.86	.....	2,187.19	.....do.....	Do.
1,780.21	155.51	91.75	40.00	.....	2,067.47	.....do.....	Do.
11,017.56	2,477.59	61.52	331.00	.....	13,887.67	Suburban, 1913.....	George Hyman.
17,071.13	3,813.43	118.82	504.00	.....	21,507.38	Suburban, 1914.....	Do.
11,630.71	2,216.88	164.17	280.00	.....	⁷ 14,291.76	.....do.....	W. F. Brenizer.
6,957.68	1,238.62	55.22	253.50	37.35	8,542.37	.....do.....	Do.
3,158.21	549.55	68.82	202.50	.....	3,979.08	.....do.....	Do.
5,867.47	383.77	1,908.55	382.00	260.31	8,802.10	Assessment and permit, 1914.	George Hyman.
1,447.94	80.82	280.70	96.50	187.53	2,093.49	.....do.....	W. F. Brenizer.
3,317.14	249.02	811.37	229.83	.....	4,607.36	.....do.....	W. F. Cush.
1,224.65	82.14	242.01	36.00	.....	1,584.80	Suburban, 1914.....	W. F. Brenizer Co.
1,767.02	129.32	424.91	108.00	.....	2,429.25	Assessment and permit, 1914.	Do.
1,161.50	36.63	98.30	45.00	Yes.	⁸ 1,341.43	Main and pipe, 1914.	Do.
.....	.....	.....	.....	.....	.....	Assessment and permit, 1914.	Do.
.....	.....	.....	.....	.....	.....	Suburban, 1914.....	George Hyman.
2,922.00	557.22	.....	258.33	.....	3,737.55	.....do.....	W. F. Brenizer Co.
144,843.73	23,710.36	8,110.25	5,043.17	530.67	182,238.18	.....	.....

¹ \$75.02 contingent fee charged against this contract.

² \$1,666.67 paid by Lynchburg Investment Corporation and \$1,597.07 paid by assessment and permit, 1914.

³ \$3,812.50 paid by appropriation for Anacostia River improvement.

⁴ \$67.08 contingency to be included; \$1,408.51 paid by Rich & Fitz Simons; repaving to be done.

TABLE NO. 2.—*Sewage-disposal system contract construction, fiscal year ended June 30, 1914.*

Contract No.	Contractor.	Location.	Character of work.	Payment on contracts.	Materials.		Cost of—		Total cost.	Completed.	Appropriation.
					Charge to contractor.	Not charged to contractor.	Inspection.	Repairs to pavements.			
5191	W. F. Brenizer Co.....	Rock Creek Valley northward from Connecticut Ave.	Rock Creek main interceptor, section No. 3.	\$17,174.97	\$2,510.53	\$28.58	\$393.84	.....	\$20,107.92	Yes....	Rock Creek main interceptor.
5320	W. F. Brenizer Co ,	East side Anacostia River between 13th and Pennsylvania Ave. Bridge.	Anacostia main interceptor.	30,960.66	4,135.92	384.12	385.63	.....	\$3,866.33	Yes....	Anacostia main interceptor.
5332	E. G. Gummel.....	Foot Howard Ave., Anacostia, near Poplar Point.	.....do.....	5,571.37	538.69	44.64	72.00	.....	\$6,226.70	Yes....	Do.
5321	W. F. Brenizer Co.....	Zoological Park on west side of Rock Creek, south of Klinge Ford Road.	Rock Creek main interceptor, section No. 4.	28,431.30	520.23	.....	796.25	.....	\$29,747.78	No....	Rock Creek main interceptor.
5310	W. F. Brenizer Co.....	In right of way and Rock Creek Park between Klinge Ford Road and Pierce's Mill Road.	Rock Creek main interceptor, section No. 5.	8,877.70	367.87	.....	185.00	.....	\$9,430.57	No....	Do.
		Total.....	.....	91,016.00	8,073.24	457.34	1,832.72	.....	101,379.30		

1 \$15,624.47 of above amount paid during 1913 is included in statement of total cost.

2 \$22,268.50 of above amount paid during 1913 is included in statement of total cost.

3 \$1,500 of above amount paid during 1913 is included in statement of total cost.

4 Part payment.

TABLE NO. 3.—Sewer construction under permit system from the appropriation for assessment and permit work for year ended June 30, 1914.

Order No.	Location.	Length.	Size.	Amount of deposit.	Cost—		Total cost.	Amount returned.	For whom done.
					To District of Columbia.	To Depositor.			
1	Fourteenth Street NW., between Euclid and Fairmont Streets.	<i>Feet.</i> 104.0	<i>Inches.</i> 12	\$145.00	\$137.14	\$137.14	\$274.28	\$7.86	Harry Wardman.
2	Harvard Street NW., between Eighteenth Street and Lanier Place.	313.1	12	550.00	550.00	550.00	1,100.00	.....	L. E. Breuninger.
3	Gresham Place NW., between Fifth and Georgia Avenue.	69.0	12	90.00	62.20	62.20	124.40	27.80	Harry A. Kile.
4	Third Street NW., between Rhode Island Avenue and T Street.	14.8	12	62.50	62.33	62.33	124.66	.17	C. L. Tankersley.
5	Eleventh Street NE., between G and H Streets.	33.7	10	67.50	66.03	66.03	133.26	.87	Martin Roth.
6	Thirteenth Street SE., between C and Walter Streets, alley 1015.	50.5	12	175.00	131.02	101.02	262.04	43.98	H. A. Kile.
7	Nineteenth Street between Belmont Road and Baltimore Street ¹ .	150.0	12	.....	.....	.....	.....	.....	.....
8	F Street NW., between Twelfth and Thirteenth Streets.	39.0	15	150.00	133.00	133.01	266.01	16.99	James L. Parson.
9	E Street NE., between Sixth and Seventh Streets.	515.5	12	500.00	499.52	499.53	999.05	.47	Kennedy Bros.
10	Eighteenth Street NW., between Kenyon and Kilbourne Streets ² .	210.0	10	240.00	211.09	211.10	422.19	28.90	Clarence F. Normant.
11	Nineteenth Street between Belmont Road and Baltimore Street.	50.0	12	42.00	33.07	33.07	66.14	8.83	R. J. Woodward.
12	Thirteenth Street NW., between G and H Streets.	.....	.....	.....	.....	.....	.....	.....	.....
	Total.	1,554.6	.....	2,022.00	1,886.00	1,886.03	3,772.03	135.97	.....

¹ Work to be done in 1915.² Changed to Job No. 210.

TABLE NO. 4.—*Sewer construction under the assessment system from the appropriation for assessment and permit work for the fiscal year ended June 30, 1914.*

Order No.	Location.	Length.	Size.	Cost of—			Total cost.
				Material.	Labor.	Repaving.	
100	Taylor St. NW., between New Hampshire Ave. and 5th St.	<i>Lin. ft.</i> 317.50	<i>In.</i> 10	\$116.57	\$393.24		\$509.81
101	9th St. NW., between Barry Place and Euclid St.	100.00	12	37.42	119.82		157.24
102	Kennedy St. NW., between 9th St. and Illinois Ave.	152.00	10	70.84	219.63		290.47
103	Wisconsin Ave. NW., between R and S Sts.	37.96	10	29.61	100.50		130.11
104	Wisconsin Ave. NW., between S and 24th Sts.	124.00	10	59.59	166.50		226.09
105	Channing St. NE., between 19th Place and 18th Place.	225.00	10	101.34	473.81		575.15
106	Florida Ave. NE., between North Capitol and P Sts.	33.00	8	9.23	25.75	\$5.49	40.47
107	Harrison St. NW., between Wisconsin Ave. and 42d St.	212.00	10	76.82	224.56		301.38
108	Livingston St. NW., between 39th and 41st Sts.	75.55	12	32.17	90.50		122.67
109	9th St. NW., between Grant Place and H Sts.	179.00	12	95.42	274.53	14.40	384.35
0	Alley of square 2558	23.00	12	10.56	40.88	9.00	60.44
111	Illinois Ave., between Decatur and Buchanan Sts.	439.20	12	169.70	372.53		542.23
112	7th St. NW., between Crittenden and Buchanan Sts.	278.84	12	119.12	202.56		321.68
113	Allison St. NW., between 7th and 8th Sts.	384.36	10	155.23	351.62		506.85
114	7th St. NW., between Allison and Buchanan Sts.	390.00	12	173.63	259.25		432.88
115	Rittenhouse St. NW., between 3d St. and North Dakota Ave.	478.70	12	215.20	475.05		690.25
116	Rittenhouse St. NW. between North Dakota Ave. and 2d St.	234.55	12	100.07	308.87	31.89	440.83
117	Rittenhouse St. NW., between 2d St. and Blair Road.	117.00	10	43.13	41.68	74.73	159.54
118	1st St. NW., between U and V Sts.	15.10	10	32.91	58.00	3.50	94.41
119	7th St. NW., between G and H Sts.	76.00	12	29.18	133.88	32.25	195.31
120	Bunker Hill Road, between 7th and 4th Sts.	318.00	10	155.08	379.29	15.05	549.42
121	Allison St., between 7th St. and Illinois Ave.	319.90	12	132.16	400.88		533.04
122	Illinois Ave. NW., between Allison and Webster Sts.	426.45	12	180.10	532.25		712.35
123	Illinois Ave. NW., between Webster St. and Grant Circle.	192.85	12	89.76	239.58		329.34
124	Grant Circle NW., between Illinois and New Hampshire Aves.	277.80	12	129.30	355.62		484.92
125	New Hampshire Ave. NW., between Grant Circle and Webster St.	117.67	12	42.67	108.00		150.67
126	Ridge Place SE., westward of 24th Place.	386.40	10	155.87	236.73		392.60
127	24th Place SE., between Ridge Place and S St.	224.30	10	95.84	159.15		254.99
128	Wisconsin Ave. NW., between Chesapeake St. and line of River Road.	374.00	10	151.23	395.68	15.05	546.91
129	Otis St. NE., between 10th and 12th Sts.	134.00 182.00	15 10	154.32	395.88		505.25
130	Nebraska Ave. NW., between Tunlow Road and Massachusetts Ave.	580.00	10	219.42	641.10		860.52
131	24th Place SE., between S and T Sts.	353.80	10	135.73	315.90		451.63
132	Varnum St., between 7th and 8th Sts.	305.40	10	131.36	295.00		426.36
133	18th St. NW., between U and California Sts.	80.00	18	64.49	164.88	35.19	264.56
134	Rhode Island Ave. NE., between 20th and Hamlin Sts.	35.00	10	12.00	36.12		48.12
135	South Dakota Ave. NE., between Myrtle St. and Rhode Island Ave.	50.00	10	18.43	55.16	13.64	87.23
136	T St. SE., between 24th St. and Naylor Road.	410.00	10	158.48	558.23		716.71
137	Sherrier Place, north of Edmonds Place.	436.20	10	171.18	654.07		825.25
138	Savannah St. SE., between 4th and 5th Sts.	178.34	8	50.55	262.42		312.97
139	High St. SE., between Valley and Maple Places.	66.50	12	26.85	114.09	5.04	145.98
140	1st St. NW., between Kennedy St. and Oregon Ave.						

¹ Suspended at request of applicant.

TABLE NO. 4.—Sewer construction under the assessment system from the appropriation for assessment and permit work for the fiscal year ended June 30, 1914—Continued.

Order No.	Location.	Length.	Size.	Cost of—			Total cost.
				Material.	Labor.	Repaving.	
		<i>Lin. ft.</i>	<i>In.</i>				
141	Right of way parcel 165/1, at 26th and Everts Sts. NE.....	123.50	15	\$142.97	\$294.84	.....	\$437.81
142	Everts St. NE., between 26th and 28th Sts.....	454.80	15	279.48	518.89	.....	798.37
143	Hobart Place west of Mount Pleasant Place NW.....	365.00	12	155.79	506.07	.....	661.86
144	do.....	378.00	10	165.60	342.91	.....	508.51
145	4th St. NE., between G and F Sts.....	278.50	12	127.35	404.82	\$106.35	638.52
146	33d St. NW., between Livingston and Morrison Sts.....	268.20	10	110.17	288.56	.....	398.73
147	33d St. NW., between Morrison and McKinley Sts.....	330.00 217.00 73.80 57.15	10 21 18 15	127.40	304.90	66.16	498.46
148	Harvard St., west of Lanier Place.....	391.00	12	186.24	418.50	.....	604.74
149	28th St. NE., between Everts and Franklin Sts.....	313.60	12	150.45	314.04	.....	464.49
150	6th St. NW., between Newton and Otis Sts.....	57.00	8	28.49	112.73	.....	141.22
151	Adams Mill Road, between Summit Place and Ontario Road.....	126.50	12	63.17	195.50	13.57	272.24
152	Florida Ave. NE., between Holbrook and H Sts.....	204.00	12	88.83	227.37	.....	316.20
153	Buchanan St. NW., between 7th St. and Illinois Ave.....	427.00	12	174.90	395.07	.....	569.97
154	Illinois Ave. NW., between Buchanan and Allison Sts.....	170.72	12	56.73	132.59	.....	189.32
155	Allison St. NW., between Illinois Ave. and 5th St.....	199.00	12	94.57	118.00	.....	212.57
156	Buchanan St. NW., between 7th St. and Kansas Ave.....	135.00	10	47.47	94.60	.....	142.07
157	Kansas Ave. NW., between Buchanan and Allison Sts.....	556.20	10	201.39	429.71	.....	631.10
158	28th St. SE., between Pennsylvania Ave. and Q St.....	461.90	10	171.58	526.39	49.21	747.18
159	28th St. SE., between Q and R Sts.....	195.00	10	91.27	213.67	.....	304.94
160	West Virginia Ave. NE., between 8th and 9th Sts.....	414.10	10	162.86	361.38	52.41	576.65
161	Livingston St., between Connecticut Ave. and 37th St., and in 37th St.....	245.40	10	107.89	288.69	.....	396.58
162	Cathedral Ave. NW., between Klinge Road and Connecticut Ave.....	21.86	12	33.28	81.25	4.73	119.26
163	Kalorama Road, between 17th St. and Avenue of Presidents.....	76.69	18	117.12	191.40	.....	308.52
164	S St. SE., between 14th and 16th Sts.....	182.00	10	63.63	301.47	.....	365.10
165	16th St. NE., between Lawrence and Monroe Sts.....	182.50	10	65.85	158.43	.....	224.28
166	9th St. NE., between Lawrence and Monroe Sts.....	406.05	12	305.50	590.84	.....	896.34
167	14th St. SE., between Good Hope Road and S St.....	299.30	10	128.17	295.71	.....	423.88
168	35th Place NW., between T and U Sts.....	222.00	12	114.34	287.74	11.22	413.30
169	W St. NW., between Flagler Place and 2d St.....	428.00	10	148.63	641.10	145.49	935.22
170	Girard St. NE., between 14th and 13th Sts.....	.....	.....	.....	.....	.....	.....
171	D St. NE., between 17th and 18th Sts.....	.....	.....	.....	.....	.....	.....
172	V St. NW., between 2d St. and Flagler Place.....	175.70	10	97.10	221.61	35.44	354.15
173	2d St. NW., between V and W Sts.....	151.50	12	53.48	184.14	.....	237.62
174	3d St. NE., between S St. and Seaton Place.....	96.05	12	53.73	119.50	11.02	184.25
175	McKinley St., between Broad Branch Road and Nevada Ave.....	125.40	12	70.81	232.81	14.32	317.94
176	Barry Place, between 8th St. and Georgia Ave.....	329.00	12	153.92	470.83	.....	624.75
177	Corbin Place NE., between Tennessee Ave. and 13th St.....	325.70	12	160.89	452.81	.....	613.70
178	Upshur St. NW., between 9th and 8th Sts.....	14.30	12	6.07	21.75	.....	27.82
179	9th St. NW., between Barry Place and Euclid St.....	204.00	12	78.94	245.24	.....	324.18
180	do.....	.....	.....	.....	.....	.....	.....
181	Park Place NW., between Kenyon and Lamont Sts.....	312.20	12	146.14	426.12	.....	572.26

¹ Charged to job 846.² Canceled.

TABLE NO. 4.—Sewer construction under the assessment system from the appropriation for assessment and permit work for the fiscal year ended June 30, 1914—Continued.

Order No.	Location.	Length.	Size.	Cost of—			Total cost.
				Material.	Labor.	Repay- ing.	
		Lin. ft.	In.				
182	Weaver Place and in Potomac Ave.....	443.40	10	\$170.13	\$554.28		\$724.41
183	1st St. SW., between B and C Sts.....	48.50	12	18.71	60.56	\$13.00	92.27
184	Morrison St. NW., between 39th St. and Connecticut Ave.....	190.00	10	80.80	200.75		281.55
185	Lowell St. NW., between 35th and 36th Sts.....	343.00	10	122.22	380.56		502.78
186	9th St. NW., between Barry Place and Euclid Sts.....	14.30	12	6.07	17.24		23.31
187	Girard St. NE., between 20th and 22d Sts.....	581.70	12	388.71	1,123.25		1,511.96
188	McKinley St. NW., between Connecticut Ave. and 39th St.....	223.50	10	96.24	268.63		364.87
189	Galena Place and Conduit Road.....	242.00	10	165.61	420.59		586.20
190	S St., between 14th and 16th Sts. SE.....	60.80	12	386.52	770.17		1,156.69
191	Olive St., between Polk and Quarles Sts. NE.....	323.31	18	128.86	717.93		846.79
192	14th St. NW., between Montague and Madison Sts.....	197.00	12	282.66	614.72	34.91	932.29
193	20th St. NE., between Girard and Hamlin Sts.....	340.60	18	98.47	322.99	150.35	571.81
194	Polk St., between Kenilworth Ave. and Olive St.....	282.07	10	171.59	608.81		780.40
195	Olive St., between Polk and Quarles Sts. NE.....	40.60	18	130.00	717.94		847.94
196	Mount Olivet Road NE., between Montello and Trinidad Aves.....	275.80	12	104.39	306.61		411.00
197	Dennison Place NW., between Sheridan and De Russey Sts.....	202.98	12	68.23	384.50		452.73
198	Mount Olivet Road NE., between Montello and Trinidad Aves.....	260.91	8	166.28	492.03	85.05	743.36
199	Kentucky Ave. SE., between South Carolina Ave. and B St.....	305.02	12	24.78	97.83		122.61
200	Brentwood Road NE., between Rhode Island Ave. and 14th St.....	64.00	12	95.97	364.53	31.37	491.87
201	D St. SW., between Delaware Ave. and South Capitol St.....	271.56	10	55.30	153.83	16.11	225.24
202	Girard St. NE., between 13th and 14th Sts.....	142.50	12	50.43	229.83	41.43	321.69
203	Olive St., between Polk and Quarles Sts. NE.....	140.00	10	128.84	717.94		846.78
204	13th St. NE., between Everts and Franklin Sts.....	197.00	12	115.87	442.79		558.66
205	West, north, and south alley, square 2722.....	340.60	12	190.64	534.93		725.57
206	Montague St. NW., between 14th and 15th Sts.....	409.40	12	94.97	300.45		395.42
207	Montague St. NW., between alley and 15th St.....	237.02	12	118.68	493.44		612.12
208	Trinidad Ave. NE., between Raum and Mount Olivet Road.....	303.00	12	89.65	590.10	35.16	714.91
209	Woodley Road, between 38th St. and Wisconsin Ave. NW.....	217.50	12		10.49		10.49
210	19th St. NW., between Belmont Road and Biltmore St.....	82.00	15	53.72	119.22		172.94
211	D St. NW., between 26th and 25th Sts.....	57.00	12	43.28	103.30	20.14	166.72
212	P St. NW., between 1st and 3d Sts.....	224.40	12	217.96	600.54		818.50
213	Jewett St. NW., between Sherrier Place and Conduit Road.....	301.10	10	92.30	249.19		341.49
214	15th St. NW., south of Dahlia St.....	228.00	10	106.76	357.18	(*)	463.94
215	17th St. NW., between Kilbourne Place and Lanier St.....	200.00	12	205.23	538.53		743.76
216	Shepherd St. NW., between New Hampshire Ave. and 5th St.....	517.80	12	117.01	211.53	(*)	328.54
217	Quincy St. NW., between 4th and 5th Sts.....	147.00	18	196.35	267.37		463.72
218	Varnum St. NW., between 7th St. and Grant Circle.....	5.00	10				
219	New Hampshire Ave. between Quincy and Randolph Sts.....	147.00	24	66.32	237.33		303.65
220	Brown St. NW., between Meridian Place and Newton St.....	150.00	12	52.36	158.28	(*)	210.64
221A	Harvard St., between Lanier Place and Mount Pleasant St.....	100.00	12	242.12	456.68		698.80
221B	Harvard St. west of Mount Pleasant St.....	12.00	10	91.61	200.17		291.78
		379.70	15				
		220.30	12				

* Construction postponed until fiscal year 1915.

* Repaving charge not yet reported by surface division.

TABLE NO. 4.—Sewer construction under the assessment system from the appropriation for assessment and permit work for the fiscal year ended June 30, 1914—Continued.

Order No.	Location.	Length.	Size.	Cost of—			Total cost.
				Material.	Labor.	Repaving	
222	15th St. NW., between Webster and Allison Sts.	Lin. ft. 23.00	In. 10	\$501.39	\$590.85	\$3.15	\$1,095.39
223	11th St. between Girard and Fairmont Sts.	365.70	24				
224	Aspen St. NW., between 6th St. and Piney Branch Road.	178.00	12	64.46	187.22	7.35	259.03
225	5th St. NW., between Taylor and Upshur Sts.	347.00	12	139.31	371.02		510.33
226	G St. NW., between 9th and 10th Sts.	119.00	12	104.85	264.06	(*)	368.91
227	Georgia Ave. NW., between Barry and Harvard Places.	195.81	24	277.10	412.90	243.12	933.12
228	15th St. NW., between Allison and Buchanan Sts.	388.30	21	429.05	565.48		994.53
229	Conduit Road, between Cushing and Dana Places.	429.50	12	158.84	484.25		643.09
230	Massachusetts Ave. SE., between 14th and A Sts.	109.10	12	61.97	151.36		213.33
231	44th St. NW., between Conduit Road and P St.	654.15	10	269.91	531.87		801.78
232	14th St. NW., between Hamilton and Ingraham Sts.	335.00	12	145.44	297.12	(*)	442.56
233	Raleigh St. SE., between Trenton Place and Sterling St.	222.50	12	94.96	203.01		297.97
234	Hamlin St., westward from 7th St. NE.	308.00	12	123.55	380.66	12.25	516.46
235	V St. NW., between 1st and North Capitol Sts.	361.13	12	154.10	394.60		548.70
236	Alley, square 369.	189.85	12	97.67	225.84	140.30	463.81
237	Livingstone St. NW., between 39th and 41st Sts.	104.50	12	35.86	121.88	(*)	157.74
238A	Quincy St. NW., between 5th St. and Rock Creek Church Road.	218.45	18	190.09	315.84	(*)	505.93
238B	Rock Creek Church Road NW., between Quincy and 4th Sts.	304.15	15	190.43	352.90	(*)	543.33
238C	4th St. NW., between Rock Creek Church Road and Randolph St.	41.65	12	15.35	59.63		74.98
239	Olive St. NE., between Quarles St. and Eastern Ave. ¹						
240	Massachusetts Ave. NW., line of Muddock Mill Road.	82.00	12	44.63	72.75	(*)	117.38
241	Nebraska Ave. NW., between Tunlaw Road and 46th St.	509.30	12	181.32	514.75	(*)	696.07
242	Florida and Trinidad Aves. NE.	Manhole.		18.39	44.37		62.76
243	21st St. NW., between K and I Sts.	100.00	12	58.91	136.06	(*)	194.97
244	4½ St. SW., between M and N Sts.	30.50	12	37.08	98.58	(*)	135.66
245	South Capitol St. SW., between O and P Sts.	267.00	10	126.74	249.90	(*)	376.64
246	Carrollburg Place SW., between O and P Sts.	219.00	10	102.35	149.86	(*)	252.21
247	O St. SE., between Carpenter Place and 29th St.	300.00	10	121.22	443.82	(*)	565.04
248	Franklin St. NE., between 14th St. and Brentwood Road.	100.00	10	53.34	51.25	(*)	104.59
249	Ellicott St. NW., between Wisconsin Ave. and 41st St.	330.00	10	133.58	257.13	(*)	390.71
250	Kenilworth Ave., between Nash and Ord Sts. NE.	Manhole.		20.51	50.00		70.51
Total.....		35,834.50		17,928.72	45,850.99	1,598.84	65,378.55

¹ Construction postponed until fiscal year 1915.

² Repaving charge not yet reported by surface division.

³ Work to be completed in 1915.

TABLE NO. 5.—Sewer construction from the appropriation for main and pipe sewers, fiscal year ended June 30, 1914.

Order No.	Location.	Length.	Size.	Basins built.	Cost of—			Total cost.
					Material.	Labor.	Repa-ving.	
500	G St. SW., between 9th and 10th Sts.	<i>Feet.</i> 237.80	<i>In.</i> 12		\$148.40	\$378.03	\$80.85	\$607.28
501	do.	252.20	12		68.60	44.20	20.25	133.05
503	Georgia Ave. and Jefferson St. NW., northeast corner.	65.00	12		39.24	80.53	4.35	124.12
504	20th and K Sts. NW., southeast corner.	3.00	12	1	16.27	38.41		54.68
505	V St. and the Avenue of the Presidents, southwest corner.	9.00	10	1	19.58	32.57		52.15
506	Alley of square 910.	32.00	8	1	15.90	57.81		73.71
507	22d St. NW., between F and G Sts.	229.70	12		108.82	323.55	36.40	468.77
508	22d St. NW., between Virginia Ave. and F St.	241.00	18		228.15	435.24	52.65	716.04
509	Alley of square 511.	290.30	12		164.76	451.71	198.14	814.61
510	North side of C St. SE., east of 12th St.	57.00	10	1	36.97	110.75		147.72
511	First St. and Randolph Place NW., southwest corner.	30.00	10	1	29.40	54.12		83.52
512	K St. NE., west of 8th St.	51.00	8	1	28.49	92.25	3.30	124.04
513	Connecticut Ave. between Ordway and Porter Sts.	63.00	15	1	56.33	82.94		139.27
514	18th St. and Kalorama Road NW., northeast corner.	33.00	12		12.31	32.06	15.32	59.69
515	Connecticut Ave. between Ordway and Porter Sts.	12.00	18	1	25.23	46.62		71.85
516	M St. NW., between 16th and 17th Sts.	206.50	12		103.96	319.11	49.00	472.07
517	Lanier Place, between Harvard St. and Quarry Road.	148.60	12	5	115.55	175.06		290.61
518	Alley of square 3001.	9.00	10	1	19.26	34.24		53.50
519	Alley of square 912.	293.00	12		145.01	459.43	191.13	795.57
520	do.	149.50	10		87.04	176.20	139.79	403.03
521	Alley of square 180.	363.80	12		183.10	629.73	237.59	1,050.42
522	John Marshall Place, north of Pennsylvania Ave. NW.	152.40	12		83.07	357.36		440.43
523	18th and C Sts. southwest and southeast corners.	78.00	10	2	60.43	136.39		196.82
524	4th, 5th, and 6th Sts. corners on M St. NW.	18.00 36.00	18 18	1	70.87	160.25		231.12
525	Pennsylvania Ave. SE., between 3d and 4th Sts.	419.80	12		279.43	811.26	418.24	1,508.93
526	18th St. NW., between L and M Sts.	202.30 308.20	12 12		123.25 141.08	554.58 651.66	39.93	717.76 792.74
527	do.							
528	Northeast corner 23d St. and Wyoming Ave. east side 23d St.	36.00	12	2	54.02	109.13		163.15
529	Monroe St., west of 14th St., sidewalk.	27.00	12	1	19.72	63.41	2.97	86.10
530	In circle at Harvard St. and Lanier Place.	80.00 15.00 15.10	10 12 6	2 1	66.71 23.80	129.47 52.12		196.18 75.92
531	10th and B Sts., southeast corner.							
532	7th St. NW., south of B, at park entrance.	18.00	12	2	26.30	62.94		89.24
533	12th St. NW., south of B, at park entrance.	15.00	12	2	39.23	74.99		114.22
534	14th St. NW., south of B, at park entrance.	12.00 24.00	12 12	2 2	30.31	60.73		91.04
535	33d and 34th Sts. and Macomb St. NW.	33.00	12	2	58.30	111.63		169.93
536	34th and Macomb Sts. NW.	39.00	12	2	48.95	88.75		137.70
537	17th and Church Sts. NW., northwest corner.	17.00	15		12.80	38.70	11.11	62.61
538	G St., between North Capitol and First.	49.20	18		42.28	137.41	38.96	218.65
539	Jackson Alley, between North Capitol and First Sts. NW.	200.00 211.00	24 24		305.88 548.32	836.06 708.30	298.49 298.50	1,440.43 1,555.12
540	Alley of square 56 in 23d St. NW., between G and H Sts.							
541	19th and G Sts. NW.	69.00	12	(²)	14.07 23.48	19.46 65.00	9.93 45.14	43.46 133.62
542	23d St. and Kalorama Place, southeast corner.	27.50	10	1	30.10	55.23		85.33
543	First St. SE., between F and Heckman Sts.	32.50 20.00	24 15		62.09	106.89	49.44	218.42

TABLE NO. 5.—Sewer construction from the appropriation for main and pipe sewers, fiscal year ended June 30, 1914—Continued.

Order No.	Location.	Length.	Size.	Basins built.	Cost of—			Total cost.
					Material.	Labor.	Repaving.	
		<i>Feet.</i>	<i>In.</i>					
545	North Capitol and G Sts.....	12.40	24	2	\$78.45	\$151.24	\$38.96	\$268.65
546	Alley of square 878.....	9.00	15					
547	Twelfth St. N.E., crossing B St.	36.00	12					
548	L St. N.W., between Connecticut Ave. and 17th St.	392.00	10	2	201.14	532.46	268.23	1,001.83
549	M St. N.W., between 21st and New Hampshire Ave.....	38.00	18					
550	Macomb St. N.W., between Connecticut Ave. and Ross Place..							
551	Mount Pleasant St. N.W., just south of Hobart Place.....	9.00	12	3	82.24	169.51		251.75
552	Thornton Place and Kalorama Road, southwest corner.....	36.00	10	1	29.83	51.00		80.83
553	4½ St. S.W., between M and N Sts.	28.50	10	1	27.52	57.18		84.70
554	Pennsylvania Ave. S.E., west of 15th St.							
556	East curb line 18th St., at tangent point at circle in Harvard St.	54.00	10	1	37.31	76.06		113.37
557	Changed to job No. 835.....	12.00	12	1	21.24	51.13		72.37
558	19th and Newton Sts., southeast corner 19th and Park Road, northwest corner.....							
559	Hobart St. N. W., about 750 feet west of Mount Pleasant St.	63.00	10	2	48.85	130.21	6.67	185.73
561	Maryland Ave. and G St. N. E., at 14th St.	27.00	12	1 Manhole	26.71	62.19	4.81	88.90
562	7th St. N.W., north of Rock Creek Church Road.....	6.00	10					
563	Warder St., just south of Rock Creek Church Road.....	29.00	12					
564	Rock Creek Church Road in line of west curb of Park Road.....	27.00	12	1	21.32	81.38		102.70
565	Warder St., just south of Quebec Place N.W.	36.00	12	1	30.27	84.12	7.46	121.85
566	Northeast corner of Georgia Ave. and Quebec Place.....	24.00	12	1	25.35	51.36	4.80	81.51
567	Quebec Place, east of Georgia Ave.	24.00	12	1	40.89	82.79	4.80	128.48
568	Georgia Ave., south of Otis Place.	33.00	10	1	27.80	43.75		71.55
569	Park Road, just west of Georgia Ave.	18.00	10	1	22.85	50.63		73.48
570	Northeast corner New Hampshire Ave. and Princeton Place.							
571	New Hampshire Ave., north of Spring Road.	21.00	10	1	25.69	67.50		93.19
572	Otis Place, east of New Hampshire Ave.	24.00	10	1	25.49	52.62		78.11
573	Southeast corner New Hampshire Ave. and Otis Place.	27.00	10	1	29.58	58.88		88.46
574	Newton Place, east of New Hampshire Ave.							
575	Macomb St., between Ross Place and 33d Place.....	18.00	12	1	24.73	53.74	2.23	80.70
576	8th St. and Maryland Ave. N.E.	28.00	42		152.46	700.36		852.82
577	7th St. and Maryland Ave. N.E.	106.50	36x54		98.65	567.33	(?)	665.98
578	.....do.							
579	7th St., and west side Maryland Ave. N.E.	25.00	54x72	(?)	157.21	542.38	(?)	699.59
580	West side of 8th St. at Maryland Ave. N.E.							
581	P St. N.W., between 10th and 11th Sts.							
582	18th St. N.W., between B and New York Ave.							
583	New York Ave. between 17th and 18th Sts.							
584	.....do.							
585	.....do.							
586	Alley of square 878.....	6.00	15	1	20.66	26.87		47.53

TABLE NO. 5.—Sewer construction from the appropriation for main and pipe sewers, fiscal year ended June 30, 1914—Continued.

Order No.	Location.	Length.	Size.	Basins built.	Cost of—			Total cost.
					Material.	Labor.	Repaving.	
		<i>Feet.</i>	<i>In.</i>					
588	In Newton St., and in 6th St. NW.....	39.00	10	2	\$46.46	\$92.75	.....	\$139.21
589	Southwest corner of Park and Otis Place.....	27.00	12	1	26.71	58.35	.....	85.06
590	Northeast corner Lincoln Road and V St.....	36.00	10	1	29.80	60.80	\$7.80	98.44
591	Northeast corner Lincoln Road and U St.....	21.00	12	1	25.56	61.25	.....	86.81
592	Northeast corner Todd Place and Summit Place.....	21.00	10	1	23.00	38.39	.....	61.39
593	North and south curb line of Harvard St., at tangent point east of 18th.....	39.00	12	2	46.84	92.25	.....	139.09
594	Front, No. 1633 V St. NW.....	40.00	12	(5) Manhole.	19.67	19.96	3.30	23.26
595	New Jersey Ave. and Warner St. (See job No. 846.).....	40.00	12	Manhole.	19.67	36.25	.....	55.92
596	Northwest corner 4th and College Sts.....	45.00	12	1	32.17	55.49	7.46	95.12
598	27th and I Sts. NW., southeast corner.....	12.00	12	1	21.24	57.93	.....	79.17
599	26th and D Sts.; 26th and E Sts. NW.....	9.00	8	(6)	4.38	73.87	10	88.25
600	1st and P Sts. SE.....	9.00	8	.....	2.65	16.50	.....	19.15
601	Levis St. NE., between 15th and 16th Sts. 4.....	.....	.....	.....	.....	.....	.....	.....
602	Wisconsin Ave., about 585 feet north of R St.....	39.00	15	2 Manhole.	55.40	129.10	.....	184.50
603	Alley of square 574.....	.....	.....	.....	20.23	42.37	.....	62.60
604	6th St. NW., between G and F Sts.....	249.40	12	.....	171.52	457.45	277.20	906.17
605	Crossing 18th St. NW., in line of F St.....	57.00	15	.....	65.64	122.59	.....	188.23
606	Crossing 18th St. NW., in line of G St.....	51.80	18	.....	45.39	130.85	.....	176.24
607	Vicinity of Harvard St., Quarry Road, and Adams Mill Road.....	48.00 81.00 6.00	10 12 15	5	156.86	354.17	.....	511.03
608	4th St. NW., in line with Washington St.....	.....	.....	Manhole.	10.57	27.84	8.25	46.66
609	Reservation 113.....	.....	.....	Manhole.	3.49	11.19	.....	14.63
610	Alley of square 99.....	.....	.....	Manhole.	11.59	28.90	.....	40.49
611	In park south of B St north, between 16th and 17th 4.....	.....	.....	.....	.....	.....	.....	.....
612	Florida Ave. NW., just west of 1st St.....	.....	.....	Manhole.	14.21	25.56	6.34	46.11
613	13th St. and Kentucky Ave. SE.....	60.00	12	.....	26.64	88.62	25.42	140.68
614	R St. NW., between 29th and 30th Sts.....	18.25	10	.....	22.44	40.00	7.75	70.19
615	Alley of square 1201.....	.....	.....	Manhole.	16.68	40.00	.....	56.68
616	25th St. NW., at K St.....	33.50 39.00 24.00	15 12 10	(7)	64.03	171.62	39.36	275.01
617	N St. NW., just west of 11th St.....	.....	.....	.....	2.50	2.65	1.54	6.69
618	Avenue of the Presidents and Q St. NW., southeast corner.....	18.00	10	1	37.00	93.26	1.65	131.91
619	G St. NE., between 7th and 8th Sts. 4.....	.....	.....	.....	.....	.....	.....	.....
620	R St. NW., between Vermont Ave. and 10th St. 4.....	.....	.....	.....	.....	.....	.....	.....
621	Massachusetts Ave. NW., west of W St. 4.....	.....	.....	.....	.....	.....	.....	.....
622	Sherman Ave. NW., about 590 feet north of Barry Place.....	48.00	10	2	65.50	149.99	.....	215.49
623	Sherman Ave. and Fairmont St. NW.....	72.00	10	2	90.35	142.69	.....	233.04
624	Sherman Ave. and Girard St. NW.....	114.00	10	3	90.35	160.11	.....	250.46
625	Sherman Ave. and Harvard St. NW.....	81.00	10	2	99.30	185.27	.....	284.57
626	Sherman Ave. and Hobart St. NW.....	27.00	10	1	25.19	55.50	.....	80.69
627	Maryland Ave. and G St. NE. 4.....	.....	.....	.....	.....	.....	.....	.....
628	Kennedy St. and Illinois Ave.; Kennedy St. and Georgia Ave.....	54.00	12	2	43.89	74.18	.....	118.07
629	9th and Kennedy Sts.....	57.12	12	2	59.49	99.18	.....	158.67

TABLE No. 5.—Sewer construction from the appropriation for main and pipe sewers, fiscal year ended June 30, 1914—Continued.

Order No.	Location.	Length.	Size.	Basins built.	Cost of—			Total cost.
					Material.	Labor.	Repaving.	
		<i>Feet.</i>	<i>In.</i>					
630	Illinois Ave. and Ingraham St..	6.00	10	3	\$43.89	\$143.25	(2)	\$187.14
631	22d and H St. NW., crossing H St.	70.80	12					
	St.	10.00	15					
632	3d and F Sts. NE.; 3d and E Sts. NE.; 2d and E Sts. NE.	28.60	8	3	48.54	102.19	\$3.66	154.39
633	26th and Water Sts. NW.	9.00	10					
634	Intersection of Maryland Ave. and G St. NE.	45.00	12					
635	12th and B Sts. north, NW.	15.00	10	(4)	29.88	108.06		137.94
636	B St. trunk sewer—concrete invert.	79.70	15		46.11	148.56	(2)	194.67
		138.00	15		89.35	215.80	(8)	305.15
					143.02	65.98		209.00
	Total.....	8,003.87	98		7,161.79	17,769.16	3,002.15	27,933.10

¹ Canceled.

² Repaving.

³ Junction chamber.

⁴ Construction postponed until fiscal year 1915.

⁵ Pipe mended.

⁶ Interceptor connections.

⁷ Gutter drop.

⁸ To be completed 1915.

TABLE No. 6.—Sewer construction from the appropriation for suburban sewers, fiscal year ended June 30, 1914.

Order No.	Location.	Length.	Size.	Character of work.	Cost of—			Total cost.
					Material.	Labor.	Repa-ving.	
		<i>Lin. ft.</i>	<i>Inches.</i>					
800	Nineteenth Place between Brant and Channing Streets¹	378.00	10	1 manhole.	\$103.89	\$426.40	.....	\$530.29
801	Thirtieth Street NW., between Military Road and Chesapeake Street.	350.00	12	do.	148.83	491.00	.....	640.43
802	Thirtieth Street NW., between Chesapeake and Brandywine Streets.	380.67	12	2 manholes.	164.17	383.50	.....	547.67
803	Thirtieth Street NW., between Brandywine and Albemarle Streets.	140.00	10	do.	51.07	93.25	.....	144.32
804	Hamilton Street NW., between Georgia Avenue and Ninth Street.	67.50	18	1 manhole.	145.15	411.25	.....	556.40
805	Alley of square 3001.	131.30	15	do.	76.81	128.50	.....	205.31
806	Evarts Street N.E., between Twenty-second Street and Queen Chapel Road.	135.00	12	do.	80.63	256.47	\$42.00	379.40
807	Eighteenth Street and Quarry Road, and in Eighteenth Street between Har- vard and Quarry.	200.00	10	do.	354.88	443.48	.....	798.36
808	Fillmore Street trunk outlet with Anacostia main interceptor.	132.10	24	Shaft.	156.19	539.38	.....	695.57
809	This work done under contract No. 5484.	26.15	96	Span.	.....	.....	.....	.....
810	do.	.....	.....	.....	.....	.....	.....	.....
811	do.	.....	.....	.....	.....	.....	.....	.....
812	do.	.....	.....	.....	.....	.....	.....	.....
813	Georgia Avenue between Upshur and Varnum Streets.	124.50	12	.....	48.19	204.13	16.93	293.25
814	Delecarlia Reservoir².	.....	.....	.....	.....	.....	.....	.....
815	do.?	.....	.....	.....	.....	.....	.....	.....
816	do.?	.....	.....	.....	.....	.....	.....	.....
817	do.?	.....	.....	.....	.....	.....	.....	.....
818	Third Street NW., between Rhode Island Avenue and T Street.	42.10	15	.....	73.06	111.07	.....	184.13
819	Alley of square 3340.	124.10	12	2 manholes.	109.96	176.85	.....	286.81
820	W Street NW., between Fourth and Third Streets.	183.00	12	1 manhole.	285.15	464.82	47.53	797.50
821	Fourth Street NW., near W Street; southeast corner Fourth and W Streets NW.	24.00	12	do.	26.82	66.24	10.16	103.22
822	Chicago Street trunk, at established bulkhead line.	.....	.....	Special construction.	170.88	399.79	.....	570.67
823	Stockfoot branch trunk sewer, at established bulkhead line.	.....	.....	do.	281.59	546.34	.....	827.93
824	Anacostia trunk sewer, at established bulkhead line.	.....	.....	do.	10.14	112.93	.....	123.07
825	Butternut Street, between Eighth and Georgia Avenues.	660.25	10	2 manholes.	274.03	797.82	.....	1,071.85
826	Butternut Street, between Piney Branch Road and Eighth Street.	107.00	10	do.	40.44	144.00	.....	184.44
827	Canal Road, between trunk sewer and existing culvert under Canal Road.	46.00	72	Culvert.	204.63	738.90	.....	943.53
828	Canal Road, between culvert under Canal Road and culvert under Chesapeake Canal Road.	.....	.....	8.5-foot transition section	46.81	139.52	.....	186.33
829	Culvert under Canal Road.	.....	.....	34.2-foot floor	24.69	262.85	.....	287.54
830	Grid Street NE., between Mills Avenue and Twenty-second Street.	400.00	12	.....	214.28	336.95	3.67	554.90
831	Knollwood Outlot, between North of Douglas Avenue.	.....	.....	Basin and tide gate	131.39	386.40	.....	517.79
832	Avenue of the Potomac, between Irving and Lamont Streets.	27.40	12	Backfilling.	10.54	42.51	.....	53.05
833	Between Alexandria Branch, Baltimore & Ohio Railroad and established bulk- head line, Anacostia River improvement.	.....	.....	.....	.....	86.27	.....	86.27

837	Eastern Street, between Piney Branch Road and Eighth Street.	117.00	39	Backfilling.....	15.81	15.81
838	Illinois Avenue at Hamilton, Ingraham, and Jefferson Streets.	40.00	24	Filling over sewer.....	30.53	30.53
839	Macomb Street, east of Massachusetts Avenue.	33.00	12	2 manholes raised.....	478.36	478.36
839A	do.	33.00	12	2 manholes raised.....	116.79	116.79
839B	Illinois Avenue and Jefferson Street NW.	33.00	12	2 manholes raised.....	166.83	166.83
840	Wisconsin Avenue, between S and Thirty-fourth Streets.	33.00	18	Conduit.....	25.84	25.84
841	In Cedar Street and Eastern Avenue.	26.20	6	Test holes dug.....	182.94	182.94
842	Georgia Avenue, north of Shepherd Street.	26.20	6	185-foot invert graded.....	253.59	253.59
843	Rock Creek main interceptor, Massachusetts Avenue fill.	18.00	12	do.	158.20	158.20
844	Southwest corner Ninth and Barry Place; northeast corner Sherman Avenue and Barry Place.	21.00	10	5 manholes raised.....	8.99	8.99
845	D Street NE., between Seventeenth and Eighteenth Streets.	186.20	24	1 sump.....	167.86	167.86
846	Forty-third Place NE., between Polk and Pine Streets.	316.40	12	5 manholes raised.....	323.69	323.69
847A	Right of way in line of Forty-third Place, between Pine and Douglas Streets.	325.00	12	do.	17.34	17.34
847B	In Kennedy Street, east of Illinois Avenue.	204.30	21	do.	90.99	90.99
848	In grounds of Walter Reed Hospital.	8.80	12	do.	702.08	702.08
849	Ninth and Gallatin Streets NW.	304.00	21	do.	312.56	312.56
850	West Virginia Avenue, between Neal and Faum Streets.	57.60	15	do.	228.32	228.32
851	Mount Pleasant Street NW., between Irving and Hobart Streets.	78.90	12	do.	314.73	314.73
852	Twenty-first Street NE., between A and B Streets.	30.40	24	do.	307.43	307.43
853	Kennedy Street NW., between Illinois Avenue and Ninth Street.	30.40	24	do.	182.58	182.58
854	do.	30.40	24	do.	366.11	366.11
855	Massachusetts Avenue NW., between Rock Creek and W Street.	8.80	12	do.	438.26	438.26
856	W Street NW., at Massachusetts Avenue.	304.00	21	do.	98.51	98.51
857	Massachusetts Avenue NW., between W and Water Streets.	57.60	15	do.	72.26	72.26
858	Rock Creek, north of Massachusetts Avenue, within park limits.	78.90	12	do.	56.25	56.25
859	Connecticut Avenue, west of Rock Creek.	30.40	24	do.	47.25	47.25
860	Normanstone Drive, at Rock Creek.	87.00	12	do.	360.84	360.84
861	Fourteenth Street, between Hamilton and Ingraham.	18.00	18	do.	224.89	224.89
862	Valley of Piney Branch, between Fourteenth Street and Georgia Avenue.	153.00	24	do.	70.94	70.94
863	Total.....	5,975.87		do.	146.13	146.13
864				do.	21,040.80	21,040.80

Canceled.

Repaving charge not yet reported by surface division

Construction postponed until fiscal year 1915.

Continuation of 1913 work

TABLE NO. 7.—Sewer construction under whole cost system from miscellaneous trust fund deposits, for fiscal year ended June 30, 1914.

Order No.	Location.	Length.	Size.	Remarks.	Amount of deposit. ¹	Cost of work. ¹	Amount returned. ¹	For whom done.
		<i>Lins. feet.</i>	<i>Inches.</i>					
1000	Thirtieth Street, between Woodland and Parkwood Drives.			Work reported 1913.	\$381.38	\$208.99	\$172.39	Massachusetts Avenue Heights Syndicate.
1001	Massachusetts Avenue Heights, near junction of Thirtieth Street.			Stream crossing.	\$570.98	448.35	122.63	Do.
1002	Granum Street, between Twelfth and Thirteenth Streets.			Work reported 1913.	\$186.54	156.54	.....	Lynchburg Investment Corporation.
1003	Granum Street, between Alaska Avenue and Thirteenth Street.	412.10	10	.....	\$585.09	585.09	.....	Do.
1004	Alley of square 2558 for service of lot 44.	100.00	10	.....	100.00	180.43	.57	O. S. Oswell.
1005	Warder Street NW., between Columbia Road and Irving Street.	33.00	10	.....	100.00	88.61	13.39	Samuel Shapiro.
1006	Everts Street NE., between Queen Chapel Road and Eighteenth Street.	208.00	8	.....	350.00	285.90	64.10	Rev. A. M. Mark.
1007	Parkwood Drive, east of Thirtieth Street.	33.00	12	3 basins ¹ .	(a)500.00	(a)490.78	(a).22	Massachusetts Avenue Heights Syndicate.
1008	Thirtieth Street NW., between Edgevale Terrace and Parkwood Drive.	52.00	12	do.	(a)	(a)	(a)	Do.
1009	Parkwood Drive, between Thirtieth and Thirtieth-second Streets.	18.00	12	2 basins.	(a)	(a)	(a)	Do.
1010	Thirty-second Street, at Parkwood Drive.		12	do.	(a)	(a)	(a)	Do.
1011	Fulton Street, at Parkwood Drive.	60.00	12	do.	(a)	(a)	(a)	Do.
1012	Alley of square 2591, between Harvard and Hobart Place.	60.00	15	do.	400.00	376.39	23.61	L. E. Breuninger.
1013	G Street NE., between Ninth and Tenth Streets.	267.00	15	.....	20.00	183.76	6.24	Samuel S. English.
1014	Adams Mill Road between Summit and Ontario Road.	97.75	10	Excess excavation.	100.00	54.40	45.60	Mark O. Davis.
1018	Thirteenth and Dogwood Streets NW.	120.00	12	6 basins.	(b)500.00	(b)499.93	(b).07	Lynchburg Investment Corporation.
1019	Thirteenth and Elder Streets NW.	60.00	12	3 basins.	(b)	(b)	(b)	Do.
1020	Alley of square 106.	32.00	12	1 manhole.	50.00	45.67	4.33	Wm. H. Linkins.
1021	Thirty-seventh Street NW., in line of O Street.	32.00	12	do.	75.00	64.73	10.27	Rev. A. J. Duarte.
1022	Macomb Street, in line of Thirty-first Street extended.	21.00	15	1 basin.	(c)500.00	(c)543.18	(c)56.82	Charles A. Platt.
1023	Kinglie Road, about 300 feet east of Thirty-first Street.	268.00	12	2 manholes.	(c)	(c)	(c)	Do.
1024	do.	95.00	10	2 basins.	(c)	(c)	(c)	Do.
1025	Alley of square 5.	37.00	10	.....	80.00	80.00	.....	Davis Construction Co.
1026	Alley of square 589.	37.00	10	.....	25.00	16.35	8.65	Anna Leahy.
1027	Thirty-second Street and Cleveland Avenue NW.	10.00	8	1 basin.	100.00	98.03	1.97	D. J. Howell & Son.
1028	F Street NW., between Twelfth and Thirteenth Streets.	48.00	12	Manhole and house connection abandoned.	50.00	5.78	44.22	James L. Parsons.
1029	Sherman Avenue, between Florida Avenue and Barry Place.	40.00	12	.....	110.00	108.64	1.36	Charles W. King.
1030	Fifteenth Street and New York Avenue NW.			Moved convenience station.	18.76	12.56	6.20	National Saving & Trust Co.

1031	McKinley Street, between Nevada Avenue and Broad Street.	417.30	12	800.00	686.02	113.98	Fulton R. Gordon.
1032	L Street SE., between Twelfth and Thirteenth Streets.	87.20	8	165.00	160.32	4.68	L. P. Stewart.
1033	Alley of square 99, between Seventh and E Streets NW.	148.00	10	290.00	205.61	84.39	J. H. D. E. Sibour.
1034	Southeast corner Seventh and E Streets NW.	15.50	10	75.00	58.21	16.79	W. G. Cornell Co.
1035	K Street NW., between Thirtieth and Thirty-first Streets	28.00	12	56.00	37.85	12.15	Marsh & Peter.
1036	Bladensburg Road, 200 feet north of H Street.	57.00	12	150.00	147.63	2.37	Woods Hargan.
1037	Hamlin Street NE., west of Twenty-fifth Street.	46.00	10	85.00	62.45	22.55	H. A. Vieth.
1038	Alley of square 545.	136.00	10	250.00	248.37	1.63	R. H. Johnson.
1039	Dahlia Street NW., between Fourteenth and Fifteenth Streets.	385.60	10	634.00	585.10	48.90	D. C. Roper; Lynchburg Investment Corporation.
1040	Kentucky Avenue SE., between South Carolina Avenue and B Streets.			40.00	18.15	21.85	A. C. Moses Construction Co.
1041	Macomb Street, east of Massachusetts Avenue.	85.00	39	600.00	589.99	10.01	Washington Ry. & Electric Co.
1041A	do.	40.00	24	125.00	122.63	2.37	Do.
1043	Alley of square 105.			50.00	17.61	32.39	Commerce Building Co.
1044	North Capitol Street, westward from North Capitol Street trunk sewer just north of E Street.	18.00	24	450.00	463.35	7.66	A. B. Mullett & Co.
1045	Eighteenth Street NW., between Connecticut Avenue and N Street.	16.50	12	40.00	33.07	6.93	E. C. Heald.
1046	Eleventh Street NE., between B and C Streets.	40.00	12	125.00	124.46	.54	Rev. J. M. O'Brien.
1047	Alley of square 283.	22.00	8	40.00	32.34	7.66	Flory & Sanford Co.
1048	Eleventh Street NW., between Fairmont and Girard Streets.			100.00	83.33	16.67	D. B. Gattwals.
1049	Warder Street NW., between Kenyon and Lamont Streets.	27.50	15				Leon Mosser.
1050	Basement of 1317 H Street NW.			15.00	4.26	10.74	Charles E. Wire.
1051	Ontario Road NW., between Lanier Place and Columbia Road.	68.00	12	216.00	154.88	61.12	H. E. Allanson.
1052	Twenty-fifth Street NE., between Hamlin and Irving Streets.	6.50	10	15.00	10.11	4.89	Pennsylvania Railroad Co.
1053	Virginia Avenue SE., about 200 feet west of New Jersey Avenue.	24.00	12	80.00	73.92	6.08	E. M. Haward.
1054	Alley of square 369.	259.30	12	15.00	7.61	7.39	A. F. Clark.
1055	Crossing O Street in line of South Capitol and in O Street between South Capitol Street and Carrollburg Place.			500.00	437.86	62.14	
	Total.	4,002.75		10,022.75	8,838.24	1,134.51	

Similar letters indicate those jobs constructed out of single deposit.

Balance of 1913 deposit.

Work incomplete, repaving to be charged.

Construction postponed until fiscal year 1915.

TABLE No. 8.—Sewer construction from miscellaneous appropriations, fiscal year ended June 30, 1914.

Order No.	Location.	Sewer laid.		Remarks.	Cost of—			Total cost.	Appropriation.
		Length.	Size.		Material.	Labor.	Contingencies.		
		<i>Lin. Ft.</i>	<i>Inches.</i>						
1100	Illinois Avenue and Jefferson Street NW 1.	18.0	12	1 basin.....	\$2.51	\$50.29	.....	\$52.80	Construction of county roads, 1914, Jefferson Street.
1101	Sixth and K Streets NE., northeast, northwest, and southeast corners.	27.0	10	3 basins.....	63.59	134.38	\$9.90	207.87	Repairs to streets, 1914.
1102	East Capitol Street between Second and Tenth Streets. ¹	12.0	12	1 basin.....	.....	6.75	.34	7.09	Repairs to streets, 1914.
1103	C Street NE., between First and Second Streets.	.....	.....	Manhole abandoned.....	2.00	4.89	.34	7.23	Improvements and repairs, 1914, pave C Street First to Fourth.
1104	W Street, east of Avenue of Presidents.....	.....	.....	1 basin abandoned; 1 basin reconstructed.....	19.42	60.19	3.98	83.59	Improvements and repairs, 1914, northwest schedule.
1105	Corners Seventh to Eleventh on H Street NE.	51.0	12	5 basins reconstructed.....	102.67	218.94	16.08	337.69	Repairs to streets, 1914.
1106	Thirteenth and South Carolina Avenue SE.	9.0	10	1 basin reconstructed.....	19.89	50.86	3.54	74.29	Improvements and repairs, 1914, southeast schedule.
1107	Fifteenth and W Streets NW., northwest corner.	.....	.....	1 basin adjusted.....	.61	6.93	.38	7.92	Improvements and repairs, 1914, northwest schedule.
1108	Sixth and O Streets, northwest corner.....	.....	.....	1 basin reconstructed.....	17.59	25.10	2.13	44.82	Assessment and permit, street.
1109	Tenth and H Streets NE., northeast corner.....	.....	.....	do.....	1.00	8.25	.46	9.71	Repairs to streets, 1914.
1110	Harvard Street, east of Lanier Place.....	30.0	12	.....	39.74	34.87	3.73	78.34	Quarry Road entrance to Zoo Park.
1111	Northwest corner Irving Street and Adams Mill Road.	45.0	15	.....	32.78	44.25	3.85	89.80	Repairs to suburban roads.
1112	Eighteenth and C Streets NW., northwest corner.	3.0	15	1 basin reconstructed.....	16.17	41.51	2.88	60.56	Repairs to streets, 1914.
1113	Harvard Street north of Columbia Road.	98.0	10	1 gutter drop.....	44.54	69.09	5.68	119.31	Quarry Road entrance to Zoo Park.
1114	Lanier Place and Quarry Road, northwest corner.	18.0	12	1 basin.....	25.83	51.69	3.88	81.40	Do.
1115	At corners of Fourth and Fifth on M Street NW.	111.0	10	5 basins reconstructed.....	160.02	376.52	26.83	563.37	Repairs to streets, 1914.
1116	Twenty-third and T Streets, northeast corner.	.....	.....	1 basin reconstructed.....	3.41	12.44	.79	16.64	Construction of suburban roads.
1117	Seventh and I Streets SW., northeast corner.	18.0	12	1 basin.....	26.66	49.37	3.80	79.83	Improvements and repairs, 1914, southeast schedule.
1118	John Marshall Place and C Street.....	48.0	12	2 basins reconstructed.....	42.80	152.90	9.78	205.38	Repairs to streets, 1914.
1119	Eighth and D Streets SW., southwest and southeast corners.	30.0	10	do.....	28.37	63.38	4.69	96.44	Do.
1120	Eighth and D Streets SW., northwest corner.	6.0	10	1 basin reconstructed.....	14.07	41.76	2.79	58.62	Do.

		57.0	12	3 basins reconstructed.....	74.79	173.25	12.40	260.44	Do.
1121	Corners Tenth and Virginia Avenue and Tenth and B Streets.	{	10	2 basins reconstructed.....	84.05	191.90	13.80	280.75	Elimination of grade crossings.
1122	New Jersey Avenue and D Street.....	15.0	12	1 basin.....	46.69	123.22	8.50	178.41	Public Library.
1123	Rear entrance Public Library.....	15.0	10	2 manholes replaced.....	5.09	21.87	1.35	28.31	Bureau of Engraving and Printing.
1124	Bureau of Engraving and Printing.....	75.0	10	1 basin.....	16.17	32.95	2.46	51.58	Repairs to streets, 1914.
1125	New Hampshire Avenue between L and M Streets.								
1126	Tuberculosis Hospital Grounds.....	27.0	36		46.95	87.12	6.70	140.77	Building and grounds Tuberculosis Hospital.
1127	Twelfth and C Streets SE., northeast corner.			1 basin reconstructed.....	17.06	56.49	3.68	77.23	Repairs to streets, 1914.
1128	Eighteenth Street NW, between Quarry Road and Summit Race.	284.7	15		161.76	521.62	34.17	717.55	Quarry Road entrance to Zoo Park.
1129	Eight and M Streets SE., northwest corner.	15.0	10	1 basin reconstructed.....	17.18	49.87	3.35	70.40	Repairs to streets, 1914.
1130	Quarry Road, between Adams Mill Road and Harvard Street.	265.0	12		189.54	472.03	33.08	694.65	Quarry Road entrance to Zoo Park.
1131	Quarry Road, between Harvard and Eighteenth Streets.	162.0	10		82.54	266.32	17.44	366.30	Do.
1132	G Street, crossing North Capitol Street....	{	15		166.57	653.68	41.01	861.26	Government Printing Office.
1133	Macomb Street between Ross Street and Connecticut Avenue.	53.9	24	1 manhole adjusted.....	3.93	19.63	1.18	24.74	Suburban Roads.
1134	F Street NW, at Seventeenth Street....	15.0	12	1 basin.....	21.99	57.49	3.97	83.45	Repairs to streets, 1914.
1135	Seventh and O Streets NW.....	6.0	12	1 basin reconstructed.....	13.29	50.81	3.21	67.31	Assessment and permit, streets.
1136	From White House Fountain to Bathing Pools.	{	15		788.73	1,603.26		2,493.79	Bathing Beach.
1137	No work under this number.....	2,040.9	11						
1138	Eighteenth and G Streets NW., northwest and northeast corners.	291.8	8	2 basins reconstructed.....	30.46	72.75	5.16	108.37	Repairs to streets, 1914.
1139	Eighteenth and F Streets NW., northwest and northeast corners.			do.....	21.16	69.38	4.53	95.07	Do.
1140	Wisconsin Avenue between Thirty-fourth and S Streets.			4 manholes raised.....	19.40	38.62	2.90	60.92	Georgetown schedule, 1914.
1141	Thirteenth and V Streets NW., northwest corner.	33.0	12	1 basin.....	28.48	90.12	5.93	124.53	Repairs to streets, 1914.
1142	Pennsylvania Avenue and H Street.....	{	10	1 basin reconstructed.....	48.88	123.73	8.63	181.24	Do.
1143	Twenty-second and H Streets NW.; Twenty-first and H Streets NW.	26.3	15		49.30	121.55	8.54	179.39	Do.
1144	Delaware Avenue and H Street SW., southeast corner.	15.0	10	1 basin.....	21.63	55.65	3.86	81.14	Do.
1145	Delaware Avenue SW., at H Street.....	15.0	12	1 basin reconstructed.....	22.58	38.15	3.04	63.77	Do.
1146	No work under this number.....								
1147	No work under this number.....								

* \$104.77 of this for repaving.

† \$8.92 of this for repaving.

‡ Continuation of 1913 work.

TABLE NO. 8.—*Sewer construction from miscellaneous appropriations, fiscal year ended June 30, 1914—Continued.*

Order No.	Location.	Sewer laid.		Remarks.	Cost of—			Total cost.	Appropriation.
		Length.	Size.		Material.	Labor.	Contingencies.		
1148	Eighteenth and R Streets NW.; Eighteenth and Riggs Streets; Eighteenth and S Streets NW.	<i>Ltn. Ft.</i> 38.5	<i>Inches.</i> 12	4 basins reconstructed.....	\$77.12	\$151.42	\$11.43	\$239.97	Repairs to streets, 1914.
1149	Quarry Road NW., east of Eighteenth Streets.	24.0	12	2 basins.....	25.56	57.90	4.17	87.63	Quarry Road entrance to Zoo Park.
1150	Southeast corner Virginia Avenue and Eleventh Street.	33.0	12	1 basin reconstructed.....	23.49	36.00	2.97	62.46	Assessment and permit, streets.
	Total.....	4,042.5	.....	.....	2,708.06	6,743.07	353.31	9,973.13	

TABLE No. 9.—*Inspectors and other employees of the sewer division, temporarily employed, and the appropriations from which paid, fiscal year ended June 30, 1914.*

Appropriations.	Inspectors.	Overseers.	Other employees.	Total.
Construction, sewerage system:				
Main and pipe sewers.....	\$1,640.38	\$697.50	\$1,877.06	\$4,214.94
Suburban sewers.....	4,045.53	490.00	2,684.81	7,220.34
Assessment and permit work.....	2,711.16	186.00	4,596.07	7,493.23
Construction, sewage-disposal system:				
Anacostia main interceptor.....	421.54	.....	496.96	918.50
Rock Creek main interceptor.....	1,034.81	.....	1,070.68	2,105.49
Maintenance:				
Cleaning and repairing.....	605.12	245.50	1,085.00	1,935.62
Sewerage pumping service.....	.....	.....	862.00	862.00
Total.....	10,458.54	1,619.00	12,672.58	24,750.12

This table includes the cost of 2 employees of the record room, 1 employee of the disbursing office carried on rolls for 4 months, also 4 employees of the purchasing office carried on the rolls for 5 months.

TABLE No. 10.—*Unit cost for construction of various sizes of pipe sewers, and for storm-water receiving basins, showing the cost of labor and cost of material, and the total cost, fiscal year 1914.*

Size of sewer.	Unit cost per foot.		Total cost per foot.
	Labor.	Material.	
8-inch diameter.....	\$0.780	\$0.280	\$1.060
10-inch diameter.....	1.076	.453	1.529
12-inch diameter.....	1.323	.513	1.836
15-inch diameter.....	1.435	.687	2.122
18-inch diameter.....	1.564	.890	2.454
21-inch diameter.....	1.694	1.343	3.037
24-inch diameter.....	2.107	1.413	3.520
Storm-water receiving basins, each.....	57.738	28.234	85.973

TABLE No. 11.—*Average cost of pipe sewers for 15 years.*

Year.	8-inch diameter.		10-inch diameter.		12-inch diameter.		15-inch diameter.		18-inch diameter.		21-inch diameter.		24-inch diameter.	
	La-bor.	Ma-te-ri-al.	La-bor.	Ma-te-ri-al.	La-bor.	Ma-te-ri-al.	La-bor.	Ma-te-ri-al.	La-bor.	Ma-te-ri-al.	La-bor.	Ma-te-ri-al.	La-bor.	Ma-te-ri-al.
1900.....	\$0.80	\$0.32	\$0.88	\$0.39	\$1.04	\$0.44	\$1.22	\$0.57	\$1.34	\$0.67	\$1.51	\$0.76	\$1.98	\$1.09
1901.....	.78	.30	.86	.41	.92	.46	1.19	.64	1.38	.73	1.50	.89	2.20	1.18
1902.....	.83	.32	.97	.41	1.04	.46	1.46	.62	1.74	.78	1.91	.96	2.43	1.23
1903.....	.80	.36	1.03	.53	1.09	.54	1.32	.73	1.52	.81	1.57	1.06	1.74	1.32
1904.....	.97	.36	.92	.55	1.17	.65	1.45	.81	1.61	.91	1.94	1.24	2.24	1.47
1905.....	.98	.38	.96	.55	1.19	.60	1.41	.77	1.45	.89	1.92	1.01	1.87	1.43
1906.....	.87	.33	1.19	.47	1.26	.54	1.41	.67	1.53	.78	1.88	.93	2.45	1.24
1907.....	1.42	.43	1.43	.48	1.30	.56	1.46	.70	1.82	.85	2.09	.98	2.78	1.26
1908.....	1.34	.42	1.26	.50	1.44	.61	1.69	.75	1.91	.90	1.74	1.14	3.65	1.50
1909.....	1.34	.36	1.16	.36	1.46	.46	1.59	.56	1.58	.62	1.67	1.07	1.91	1.18
1910.....	1.00	.29	.99	.35	1.12	.43	1.19	.52	1.49	.66	1.52	.85	1.72	1.14
1911.....	1.01	.27	1.02	.32	1.17	.40	1.36	.52	1.64	.67	1.50	.75	1.82	1.08
1912.....	1.06	.25	1.08	.33	1.20	.39	1.46	.56	1.63	.67	1.70	.83	1.76	.98
1913.....	1.02	.26	1.07	.29	1.35	.38	1.53	.58	1.74	.75	1.93	1.08	2.20	1.28
1914.....	.78	.28	1.08	.45	1.32	.51	1.44	.69	1.56	.89	1.69	1.34	2.11	1.41

TABLE NO. 12.—*Contract prices for construction materials, for 15 years.*

[Cement per barrel; sand and gravel per cubic yard; terra-cotta sewer pipe per linear foot.]

Year.	Ce- ment.	Sand.	Peb- bles.	Terra-cotta pipe.							
				8-inch.	10-inch.	12-inch.	15-inch.	18-inch.	21-inch.	24-inch.	
		<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	
1900.....	1.75	0.70	0.90	0.11	0.15	0.17	0.25	0.34	0.58	0.65	
1901.....	1.85	.68	.93	.12	.165	.185	.265	.37	.575	.72	
1902.....	1.82	.65	.88	.115	.17	.205	.275	.39	.59	.77	
1903.....	1.96	.55	.87	.12	.185	.235	.33	.42	.62	.80	
1904.....	1.75	.85	.85	.12	.228	.297	.401	.5049	.7425	.965	
1905.....	1.13	.81	.85	.14	.20	.29	.40	.50	.74	.96	
1906.....	1.35	.85	1.05	.122	.1647	.2236	.2997	.3672	.5454	.7263	
1907.....	1.55	.74	.97	.155	.195	.261	.353	.443	.5454	.848	
1908.....	1.52	.84	1.04	.155	.225	.30	.405	.51	.75	.975	
1909.....	1.20	.55	.75	.155	.1707	.239	.3233	.4066	.5975	.7775	
1910.....	.975	.54	.65	.125	.15	.20	.27	.3825	.5625	.73125	
1911.....	.99	.395	.485	.115	.175	.22	.30	.42	.55	.715	
1912.....	.98	.345	.435	.121	.176	.22	.31	.40	.59	.715	
1913.....	.94	.345	.435	.105	.15	.18	.351	.494	.78	.845	
1914.....	1.11	.54	.69	.11	.256	.25	.432	.608	.96	1.04	

TABLE NO. 13.—*Maintenance sewerage system—work for 10 years.*

	1914	1913	1912	1911	1910
Main sewers cleaned.....feet..	1,113	4,525	4,071	300	1,185
Pipe sewers cleaned.....	145,767	123,545	122,838	161,190	149,696
Pipe sewers flushed.....	6,339,122	6,705,367	5,906,405	5,685,423	3,717,332
Manholes flushed.....	17,208	18,594	16,733	15,994	11,943
Sumps, regs, gates, cl-insp.....	4,222	3,949	2,245	530	568
Basins flushed.....	18,586	18,416	5,293	11,950	18,894
Basins cleaned.....	45,502	40,244	38,760	60,379	57,753
Sludge removed:					
Pipe sewers.....cu. ft..	4,079	3,723	2,479	3,538	5,052
Basins.....do.....	160,660	168,696	147,741	166,428	190,204
Sediment chamber.....do.....	62,856	66,744	53,140	58,131	58,577
Screens.....pounds..	798,666	869,640	1,084,128	833,617	890,230
Main sewers inspected.....miles..	134	130.90	126.24	122.78	114
Pipe sewers inspected.....do.....	1,200	1,270	491.47	469.42	448.78
Basins repaired.....	124	117	141	155	249

	1909	1908	1907	1906	1905
Main sewers cleaned.....feet..	11,624	13,723	24,724	10,360	41,967
Pipe sewers cleaned.....	153,145	84,914	86,101	111,879	86,692
Pipe sewers flushed.....	1,873,142	1,795,200	1,846,300	1,800,200	1,650,500
Manholes flushed.....	5,295	6,093	2,351	4,822	4,251
Sumps, regs, gates, cl-insp.....	11	8	8	8	8
Basins flushed.....	2,829				
Basins cleaned.....	52,634	40,866	45,809	56,884	48,723
Sludge removed:					
Pipe sewers.....cu. t..	3,334	3,256	3,455	3,325	3,297
Basins.....do.....	188,460	277,319	347,598	193,077	258,545
Sediment chamber.....do.....	61,695	20,900			
Screens.....pounds..	16,394				
Main sewers inspected.....miles..	114				
Pipe sewers inspected.....do.....	346	340	350	341	312
Basins repaired.....	123	88	99	124	150

TABLE No. 14.—Summary of sewerage system for 25 years.

Fiscal year.	Total length.			Total cost.		Annual cost maintenance and operation.	
	Trunk sewers.	Pipe sewers.	All sewers.	Sewerage system. ¹	Sewage-disposal system.	Sewerage system.	Sewage-disposal system. ²
	<i>Miles.</i>	<i>Miles.</i>	<i>Miles.</i>				
1890.....	62.05	204.13	266.18	\$7,400,721.61	.....	\$35,000.00	.....
1891.....	64.89	216.79	281.68	7,623,721.62	.....	42,000.00	.....
1892.....	67.16	227.60	294.76	7,842,721.62	.....	43,000.00	.....
1893.....	68.37	238.45	306.82	8,007,721.62	.....	45,000.00	.....
1894.....	71.32	250.13	321.45	8,298,931.62	.....	45,000.00	.....
1895.....	74.48	260.20	334.68	8,476,431.62	.....	45,000.00	.....
1896.....	77.65	270.28	347.93	8,661,731.62	.....	45,000.00	.....
1897.....	81.36	284.06	365.42	8,901,731.62	.....	50,000.00	.....
1898.....	83.92	298.91	382.93	9,047,731.62	.....	50,000.00	.....
1899.....	85.65	307.36	393.01	9,183,731.62	.....	50,000.00	.....
1900.....	88.30	317.20	405.50	9,309,731.62	.....	50,000.00	.....
1901.....	90.89	327.86	418.75	9,515,731.62	.....	50,000.00	.....
1902.....	93.49	338.13	431.62	9,696,731.62	.....	58,000.00	.....
1903.....	96.31	351.73	448.04	9,817,731.62	.....	58,000.00	.....
1904.....	99.12	357.70	456.82	9,940,731.62	.....	58,000.00	.....
1905.....	103.21	365.60	468.81	10,040,881.62	.....	58,000.00	.....
1906.....	109.09	375.26	484.35	10,128,881.62	.....	42,000.00	.....
1907.....	112.20	389.24	501.44	10,363,881.62	\$3,714,823.00	38,000.00	\$37,295.00
1908.....	113.94	407.24	521.18	10,536,681.62	3,952,768.65	44,500.00	38,625.00
1909.....	117.24	424.02	541.26	10,688,681.62	4,031,888.27	45,000.00	58,000.00
1910.....	119.20	448.78	567.98	10,860,556.62	4,095,630.70	48,500.00	58,000.00
1911.....	122.78	469.42	592.20	11,204,188.79	4,146,228.01	50,000.00	58,000.00
1912.....	126.01	492.62	618.53	11,539,374.28	4,228,555.94	50,000.00	59,500.00
1913.....	130.90	513.38	644.28	11,922,177.04	4,366,624.43	50,000.00	59,500.00
1914.....	133.50	527.99	661.49	12,470,940.74	4,495,630.13	50,500.00	62,000.00

¹ Exclusive of sewage-disposal system.² The sewage-disposal system went into operation July 1, 1906.³ Handling a part of the sewage only during these years.

TABLE No. 15.—Rights of way acquired during the fiscal year ending June 30, 1914.

For separate system sewer for service of St. Francis de Sales Church (east side interceptor) in line of Everts Street NE. extended, westward from Queens Chapel Road; through parcel 154/10.¹

For separate system outlet sewer (Ashby Street outlet); through lot 6 of square 1418.²

For separate system outlet sewer (Ashby Street outlet); through lot 39 of square 1418.²

For separate system service sewer (Kenilworth trunk) in line of Kenilworth Avenue NE. extended, between Polk Street extended and Ord Street; through lot 12 of square 5115.²

For separate system outlet service sewer (Falls Branch trunk) in line of Forty-fourth Street NW. extended, between River Road and Fessenden Street; through parcel 25/28.³

For separate system outlet service sewer (Falls Branch trunk) in line of Forty-fourth Street NW. extended, between Ellicott Street extended and Garrison Street extended; through parcel 25/30.³

For separate system outlet service sewer (Falls Branch trunk) in line of Forty-fourth Street NW. extended, between Fessenden Street and Garrison Street extended; through parcel 25/8.³

For separate system outlet service sewer (Falls Branch trunk) in line of Forty-fourth Street NW. extended, between Garrison Street extended and Harrison Street extended; through parcel 25/5.³

For separate system outlet service sewer (Falls Branch trunk) in line of Forty-fourth Street NW. extended, between Harrison Street extended and Jenifer Street extended; through parcel 25/4.³

For separate system outlet service sewer (Falls Branch trunk) in line of Forty-fourth Street NW. extended, between Harrison Street extended and Jenifer Street extended; through parcel 26/1.²

¹ Permit not recorded.² Voluntary dedication.³ Consideration paid.

For separate system outlet service sewer (Falls Branch trunk) in line of Forty-fourth Street NW. extended, between Harrison Street extended and Western Avenue extended and thence to Wisconsin Avenue; through parcel 26/2.¹

For separate system service sewer (Falls Branch trunk) between Forty-second Place and Forty-second Street; through lots 2 and 1 of square 1664.²

Good Hope Run Trunk Outlet.—For combined system between established bulk-head line, Anacostia River improvement, and line of condemnation for highway and park purposes, Anacostia River improvement; through parcel 224/5.¹

Naylor Road Trunk Outlet.—For combined system between the established bulk-head line, Anacostia River improvement, and line of condemnation for highway and park purposes, Anacostia River improvement; through parcel 217/1.¹

For combined system Macomb Street trunk (Arizona Avenue trunk) in line of Macomb Street NW. extended, and north of Macomb Street extended, between Massachusetts Avenue and Old Massachusetts Avenue; through parcel 32/3.³

For separate system outlet sewer (Kenilworth trunk) between Douglas Avenue NE. and line of Forty-third Place, produced; also in line of Forty-third Place, produced, between Douglas Avenue and Pine Street; through lot 70 of square 5115.¹

For separate system service sewer (Arizona Avenue trunk) in line of Forty-fourth Street NW. extended, between Conduit Road, produced, and P Street; through parcel 27/51.² Washington Railway & Electric Co., owner of record.

For separate system service sewer (Arizona Avenue trunk) in line of Forty-fourth Street NW. extended, between Conduit Road, produced, and P Street; through parcel 27/51.³ Foxall Heights Co., owner by claim.

For combined system service sewer (Piney Branch trunk) in line of Fifteenth Street NW. extended, between Allison Street and Buchanan Street; through parcel 84/76.²

For separate system outlet sewer (Kenilworth trunk) between right of way of Baltimore & Ohio Railroad and line of Forty-eighth Street NE.; also for separate system service sewer (Kenilworth trunk) in line of Nash Street NE. extended, between Forty-eighth Street and Forty-eighth Place extended, and in line of Forty-eighth Place extended, between Nash Street extended and Meade Street; through parcel 188/2.¹

For separate system outlet sewer (Kenilworth trunk) in line of Forty-ninth Street NE. extended, between Nash Street extended and Quarles Street extended; also for separate system service sewer (Kenilworth trunk) in line of Quarles Street NE. extended, between Minnesota Avenue and Eastern Avenue; through parcel 184/1.¹

TABLE NO. 16.—Conduits laid during fiscal year ended June 30, 1914.

Number of ducts.	Potomac Electric Power Co.		Chesapeake & Potomac Telephone Co.		Western Union Telegraph Co.		Total.	
	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.
	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
1.....	4,901.8	4,901.8	3,361.1	3,361.1	^a 20.0	^a 20.0	8,282.9	8,282.9
2.....	2,745.7	5,491.4	17,763.2	35,526.4	607.0	1,214.0	21,115.9	42,231.8
3.....			177.0	531.0			177.0	531.0
4.....	^b 34,728.4	138,913.6	3,090.0	12,360.0			37,818.4	151,273.6
8.....	2,676.2	21,409.6					2,676.2	21,409.6
Total.....	45,052.1	170,716.4	24,391.3	51,778.5	627.0	1,234.0	70,070.4	223,728.9

^a Washington & Old Dominion Ry. Co. conduit.

^b Includes 34 feet of Washington Ry. & Electric Co. 4-duct conduit.

This table does not include 436.8 feet of 4-duct and 1,385.9 feet of 8-duct conduit, 1,385.9 feet of 4-inch steam and 3-inch return pipe, and 457 feet of 7 by 8 foot subway laid by United States Government.

¹ Consideration paid.

² Voluntary dedication.

³ Permit not recorded.

TABLE No. 17.—*Statement of electric conduits laid by public-service corporations each year from 1901 to 1914, inclusive.*

	Washington Ry. & Electric Co.		Potomac Electric Power Co.		Capitol Traction Co.	
	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.
Laid prior to Mar. 27, 1900.	<i>Feet.</i> 75,743	<i>Feet.</i> 569,332	<i>Feet.</i> 343,885	<i>Feet.</i> 1,814,966	<i>Feet.</i> 48,218	<i>Feet.</i> 399,851
1901	88	704	16,387	65,952		
1902			8,098	89,958		
1903			24,655	105,492		
1904			15,635	65,412		
1905	4,670	37,360	13,798	56,892		
1906			50,057	287,311		
1907			38,053	252,741	5,285	29,652
1908			39,705	154,940	23	92
1909	859	6,643	58,607	235,225	11,769	90,660
1910	420	1,806	46,097	159,320	203	1,788
1911			56,028	240,518	914	6,321
1912	42	168	63,842	336,358	9,416	58,542
1913			39,884	146,121	2,300	18,400
1914	34	136	45,018	170,580		

	Chesapeake & Potomac Telephone Co.		Western Union Telegraph Co.		Postal Telegraph Cable Co.	
	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.
Laid prior to Mar. 27, 1900.	<i>Feet.</i> 79,920	<i>Feet.</i> 698,920	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
1901	876	4,690				
1902						
1903	123,604	640,448				
1904	35,905	138,649				
1905	39,409	147,002				
1906	80,433	278,693	10,635	44,995		
1907	75,110	281,405	383	1,710		
1908	58,005	228,725	11,463	51,775		
1909	11,769	90,660	2,322	7,515		
1910	56,582	140,859	329	652		
1911	44,823	297,760			531	531
1912	19,966	45,698			50,238	232,992
1913	22,981	64,632			2,915	15,704
1914	24,391	51,779	627	1,234		

¹ Figures on this line are for period from Mar. 27, 1900, to June 30, 1901.

TABLE No. 18.—*Summary of conduits laid from Mar. 27, 1900, to June 30, 1914.*

Number of ducts.	Washington Ry. & Electric Co.		Potomac Electric Power Co.		Capital Traction Co.		Chesapeake & Potomac Telephone Co.	
	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.
	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
1.			68,923	68,923			52,646	52,646
2.	13	26	143,730	287,460	15,742	31,484	267,976	535,952
3.			236	708			5,832	17,496
4.	33,398	133,592	435,586	1,742,344	22,681	90,724	175,005	700,020
5.								
6.	5,117	30,702	46,074	276,444	8,174	49,044	95,347	572,082
7.					29	203	82	574
8.	19,086	152,688	89,618	717,744	15,214	121,712	52,009	416,072
9.			7,325	65,925			114	1,026
10.	8,275	82,750	121	1,210	32	320	22,364	223,640
11.	11,458	137,496	49,967	599,604	908	10,896	11,336	136,032
12.			374	4,862			212	2,756
13.	1,880	26,320	1,224	17,136	4,257	59,598	3,831	56,631
14.			68	1,020				
15.			4,971	79,536	401	6,416	8,037	128,584
16.							636	10,812
17.							4,149	74,682
18.	2,214	39,852					1,407	28,140
19.			562	11,240	830	16,600		

TABLE NO. 18.—*Summary of conduits laid from Mar. 27, 1900, to June 30, 1914—Continued.*

Number of ducts.	Washington Ry. & Electric Co.		Potomac Electric Power Co.		Capital Traction Co.		Chesapeake & Potomac Telephone Co.	
	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.
	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
22.....	134	2,948			9,109	200,398	823	18,106
24.....			3,176	76,224			2,270	54,480
25.....					280	7,280	304	7,600
26.....								
28.....	87	2,436	2,174	60,872				
30.....			53	1,590			313	9,390
32.....			77	2,464			485	15,520
36.....			3,854	138,744			26	936
38.....								
40.....	193	7,334						
44.....							1,589	63,560
46.....			424	18,656			749	41,944
56.....								
58.....			7	406				
64.....			106	6,784			176	11,264
70.....							53	3,710
72.....							118	8,496
82.....							35	2,870
Total.....	81,855	616,144	858,650	4,179,896	77,655	594,675	707,925	3,195,021

Number of ducts.	Western Union Telegraph Co.		Postal Telegraph Cable Co.		Total.	
	Conduit.	Duct.	Conduit.	Duct.	Conduit.	Duct.
	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
1.....	41	41	15,297	15,297	136,907	136,907
2.....	2,518	5,036	1,045	2,090	431,024	862,048
3.....	6,940	20,820			13,008	39,024
4.....	7,295	29,180	34,001	136,004	707,966	2,831,864
5.....	4,177	20,885			4,177	20,885
6.....	4,232	25,392	16,903	101,418	175,847	1,055,082
7.....					109	777
8.....			1,140	9,120	177,067	1,417,336
9.....					7,439	65,925
10.....	183	1,830			30,975	309,750
12.....					73,660	884,028
13.....	309	4,017			895	11,635
14.....					11,192	159,685
15.....	44	660			1,112	1,680
16.....					13,409	214,536
17.....					636	10,812
18.....					6,363	114,534
20.....					2,799	55,980
22.....					10,066	221,452
24.....					5,446	130,704
25.....					304	7,600
26.....					280	7,280
28.....					2,261	63,308
30.....					366	10,980
32.....					562	17,954
36.....					3,880	139,680
38.....					193	7,334
40.....					1,589	63,560
44.....					424	18,656
56.....					749	41,944
58.....					7	406
64.....					282	18,048
70.....					53	3,710
72.....					118	8,496
82.....					35	2,870
Total.....	25,739	107,861	68,386	263,929	1,821,209	8,956,526

NOTE.—This table does not include 8,397 feet of United States Government conduit, 7,888 feet of United States Government pipe lines, 216 feet of Washington & Old Dominion Ry. Co. conduit, 879.5 feet of Washington Market Co. pipe lines, 688.6 feet of private conduit, and 457 feet of 7 by 8 foot subway laid by United States Government.

TABLE NO. 19.—*Gas mains laid during fiscal year ended June 30, 1914,*

Size of mains.	Washington Gas Light Co.	Georgetown Gas Light Co.	Total.
	<i>Linear feet.</i>	<i>Linear feet.</i>	<i>Linear feet.</i>
2 inches.....	50.0	243.0	293.0
3 inches.....	2,787.0		2,787.0
4 inches.....	18,601.7	2,954.9	21,556.6
6 inches.....	18,346.7	2,641.0	20,987.7
8 inches.....	4,481.0		4,481.0
20 inches.....	2,824.8		2,824.8
24 inches.....	1,383.3		1,383.3
Total.....	48,474.5	5,838.9	54,313.4

TABLE NO. 20.—*Statement gas mains laid by gas companies from 1907 to 1914, inclusive.*

Fiscal year.	Washington Gas Light Co.	Georgetown Gas Light Co.	Total.
	<i>Linear feet.</i>	<i>Linear feet.</i>	<i>Linear feet.</i>
1907.....	36,605.0	8,450.0	45,055.0
1908.....	61,642.0	19,777.0	81,419.0
1909.....	83,692.0	25,498.0	109,190.0
1910.....	69,237.0	2,202.0	71,439.0
1911.....	48,192.1	10,982.8	59,174.9
1912.....	88,583.0	50,177.6	138,760.6
1913.....	61,234.1	11,687.7	72,921.8
1914.....	48,474.5	5,838.9	54,313.4

TABLE NO. 21.—*Summary of gas mains laid to June 30, 1914, beginning July 1, 1906.*

Size of mains.	Washington Gas Light Co.	Georgetown Gas Light Co.	Total.
	<i>Linear feet.</i>	<i>Linear feet.</i>	<i>Linear feet.</i>
1½ inches.....	1,647		1,647
2 inches.....	5,628	1,311	6,939
3 inches.....	4,593		4,593
4 inches.....	162,417	26,678	189,095
6 inches.....	213,313	51,414	264,727
8 inches.....	8,929	14,268	23,197
10 inches.....		4,107	4,107
12 inches.....	79,523	33,309	112,832
20 inches.....	8,269		8,269
24 inches.....	9,571		9,571
Total.....	493,890	131,087	624,977

REPORT OF INSPECTOR OF BUILDINGS.

WASHINGTON, August 13, 1914.

SIR: I submit herewith the annual report covering the transactions of the building division during the fiscal year ended June 30, 1914. No operations of the Federal Government were reported during the year.

Statements of permits issued from July 1, 1913, to June 30, 1914.

	Number.	Value.		Number.	Value.
Brick:			Brick—Continued.		
Repairs.....	1,450	\$1,180,232	Hall.....	1	\$25,600
Dwellings.....	898	2,681,450	Dwelling and office.....	1	75,000
Apartments.....	34	1,472,480	Tile, dwellings.....	13	133,000
Hotels.....	2	240,000	Concrete, garages.....	9	3,600
Stores and dwellings.....	27	139,411	Metal:		
Stores.....	47	662,111	Sheds.....	74	9,467
Office buildings.....	5	403,500	Churches.....	2	1,000
Stables.....	14	12,375	Garages.....	73	8,833
Garages.....	120	114,601	Frame:		
Warehouses.....	20	164,730	Sheds.....	527	32,429
Workshops.....	6	3,075	Repairs.....	558	99,539
Sheds.....	7	3,550	Dwellings.....	250	743,965
Clubhouse.....	1	31,128	Stores.....	3	625
Dairies.....	3	43,500	Churches.....	3	5,365
Theaters.....	13	114,723	Observatory.....	1	4,000
Bakery.....	1	9,000	Stables.....	17	2,480
Laboratory.....	1	2,500	Store and dwelling.....	4	495
Power house.....	1	1,800	Boathouse.....	1	3,600
Laundry.....	1	10,000	Pavilion.....	1	1,000
Factories.....	2	5,300	Open-air park.....	1	600
Orphanage.....	1	54,000	Elevators.....	92	164,007
Churches.....	8	158,000	Motors.....	201	88,489
"Home".....	1	75,000	Boilers.....	12	22,700
Stores and offices.....	2	18,000	Gas engines.....	4	2,400
Warehouse and private garage.....	1	3,000	Total.....	4,531	9,518,052
Carriage houses.....	2	1,850	Awnings.....	156	11,700
Greenhouses.....	7	22,500	Fire escapes.....	33	6,600
Ice houses.....	2	22,144	Signs.....	795	7,950
Sanatorium.....	1	20,000	Grand total.....	5,515	9,544,302
Hospital.....	1	250,750			
Schools.....	2	165,000			
Chapel.....	1	3,150			

Comparative statement for the years 1913 and 1914.

	New buildings.	Repairs, etc.	Dwell-ings.	Apart-ments.	Business buildings.
1914.....	1,496	4,019	1,161	34	301
1913.....	1,850	4,246	1,540	14	296
Total.....	1,354	1,227	1,379	20	5

¹ Decrease.

Valuation of building operations, including awnings, fire escapes, and signs:

1914.....	\$9,544,302
1913.....	10,243,748

Decrease..... 699,446

Permits issued, including buildings, repairs, awnings, signs, motors, elevators, etc.:

1914.....	5,644
1913.....	6,294

Decrease..... 650

Projections beyond the building line, permits for..... 1,851

The following summary will show the distribution of improvements in the different sections of the District, and the values of same:

	Buildings.	Repairs, etc. ¹
Northeast.....	\$707,039	\$100,523
Southeast.....	357,150	56,383
Northwest.....	2,777,379	1,077,116
Southwest.....	150,505	37,904
County.....	3,838,490	415,561
Total.....	7,830,563	1,687,480

¹ Does not include awnings, fire escapes, or signs, cost of which is estimated.

Total for buildings, repairs, etc., \$9,544,302.

Estimated number of buildings in the District of Columbia.

	Brick.	Frame.
1913.....	59,790	25,841
1914.....	1,214	248
Total.....	61,004	26,089
Erected during 1914.....	1,230	266
Razed during 1914.....	16	18
Total.....	1,214	248

As will be noted from the above there was a general decrease in building operations in this city, as in other cities of the Union, during the past year. The valuation of the operations being some \$700,000 less than the year previous and some \$7,000,000 less than the year previous to that.

The fees collected by the office for permits were also less, amounting only to \$25,005.61, whereas the expenses of the office (\$34,594.02) were about the same as last year, and therefore the receipts did not meet the expenditures by \$9,588.41. In anticipation of this loss of revenue there was promulgated by the commissioners an amendment to the building regulations effective April 1, 1914, enlarging the scope of fees charged by this office, so as to charge for inspection of elevators, theaters, and other places of public amusement, as well as buildings falling within the purview of the fire-escape law, all of which it is expected will add about \$5,000 annually to the income of this division.

In this connection it is to be noted that this office has for years been charged with the inspection of hotels, public halls, moving-picture establishments, theaters, etc., for which annual licenses are issued (and in this year collections made of \$16.618) by the assessor, and for which this office has received no reimbursement. It would seem only fair that some portion of this amount should be credited to this office.

During the year certain amendments were made to the building regulations, notably the one just referred to, with respect to additional fees for permits. Also one providing for the better protection of workmen in skeleton steel buildings, and one to prohibit the construction of long, narrow tenement houses with insufficient light and air.

The city of Washington was on July 30, 1913, visited by an extraordinarily violent hurricane. Generally the buildings withstood the storm without material damage, but one serious collapse did occur, that to the building on the northeast corner of Seventh and L Streets NW., which blew down, killing two persons and injuring several others.

Herewith are transmitted the reports of the civil engineers and computers, the fire-escape inspector, the elevator inspectors, and the several assistant building inspectors, which show the details of the work covered by the office.

Excellent results have been accomplished during the year in the equipment of buildings, as required by the fire-escape law. The records show a greater number of compliances with this law than in any previous year.

Attention has been invited in the estimates forwarded to the commissioners for the year 1916 to the recommendations for increases in salaries in this office, for adequate transportation, and for appropriation to cover cost of viewing certain tests of fireproof materials.

While the records of the year do not indicate that the valuation of building operations were as great as in the last years, the inspection work has been more scattered and the force has had all it could do to properly supervise and inspect this work. These conscientious employees, in fairness to them and to the municipality, should be shown appreciation and given encouragement by additional remuneration. My acknowledgments are due them for the work accomplished during the past year.

MORRIS HACKER.

Inspector of Buildings.

Capt. ROGER G. POWELL,

*Captain, Corps of Engineers, United States Army,
Assistant to Engineer Commissioner.*

COMPUTERS' REPORT.

WASHINGTON, D. C., *September 14, 1914.*

SIR: We submit herewith our report for the fiscal year ended June 30, 1914.

There has been a falling off in the building of small dwellings, as compared with previous years. The erection of the more pretentious dwellings has been normal, or practically so.

The most noteworthy feature as observed by this branch of the division—and a most desirable one—is the increase in fireproof construction. This obtains even in the case of three and four story apartment houses, 90 per cent. of which are fireproof. And this is true even of those apartments under 55 feet in height.

During the year, too, many high-class fire-resisting office buildings, warehouses, etc., designed in many cases by some of the leading architects and engineers of the country, have been submitted to and passed upon by us. The intelligent consideration of the plans of such structures requires that the District engineers and computers be constantly studying the best authors and most advanced practical exponents of such construction that they may keep abreast of the most enlightened and up-to-date methods employed.

The outlook is particularly promising for an increasing proportion of fireproof construction in the District, and a gradual reduction in combustible buildings now standing, with special reference to buildings of a public nature.

T. L. COSTIGAN,

F. W. HART,

Civil Engineers and Computers, District of Columbia.

The INSPECTOR OF BUILDINGS.

REPORT OF INSPECTOR OF FIRE ESCAPES.

WASHINGTON, *August 19, 1914.*

SIR: I have the honor to respectfully submit my annual report for the fiscal year ended June 30, 1914, as follows:

Visits to apartment houses.....	1,224
Visits to theaters.....	353
Visits to hotels.....	119
Miscellaneous visits, including halls, stores, etc.....	2,656
Notices served.....	130
Compliance notices mailed.....	255
Fire escapes erected.....	98
Active cases in files.....	141

Very respectfully,

JAMES P. PARRY,

Inspector of Fire Escapes.

The INSPECTOR OF BUILDINGS.

REPORT OF INSPECTORS OF ELEVATORS.

WASHINGTON, *July 1, 1914.*

SIR: I have the honor to herewith submit my annual report for the fiscal year ended June 30, 1914:

Passenger elevators installed.....	22
Freight elevators installed.....	9
Hand-power elevators installed.....	14
Alterations to elevators.....	1
Miscellaneous inspections.....	53
Elevators examined.....	1,380
Condemnations on elevators.....	540
Elevators inspected for United States Government.....	62
Condemnations on elevators for United States Government.....	9
Elevators inspected for District of Columbia.....	36

WILLIAM I. EVANS,

Inspector of Elevators.

The INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1914.

SIR: I have the honor to submit my report for the fiscal year ending June 30, 1914, covering the duties assigned to me in the district north of Pennsylvania Avenue, east of Tenth Street, and north of Massachusetts Avenue.

Passenger elevators installed.....	20
Passenger elevators altered.....	3
Freight elevators installed.....	17
Elevators inspected quarterly.....	302
Total inspections.....	1, 604
Total condemnations.....	826
Inspections for United States Government.....	52
Condemnations on elevators of United States Government.....	27
Miscellaneous inspections, visits, etc.....	72
Certificates issued.....	950

Respectfully submitted.

R. H. BRUCE, *Inspector of Elevators.*

THE INSPECTOR OF BUILDINGS.

WASHINGTON, September 16, 1914.

SIR: We have the honor to submit herewith the report of the transactions of the board of examiners for elevator operators for the fiscal year ending June 30, 1914.

A regular weekly meeting has been held during the year and has resulted in a satisfactory increase of efficiency in the elevator operators in the District.

Elevator operators examined.....	365
Operators who failed in examination.....	31
Revenue derived from examinations for the District of Columbia.....	\$182. 50

Very respectfully,

ROY E. HAYNES,
Secretary Board of Elevator Examiners.

THE INSPECTOR OF BUILDINGS.

REPORTS OF THE ASSISTANT INSPECTORS OF BUILDINGS.

WASHINGTON, July 1, 1914.

SIR: In accordance with the following reports of the assistant inspectors for the fiscal year ending June 30, 1914, a decrease of 8,425 inspections is shown in the total of 65,668 against 74,093 the previous year, the average attained being 8,208.50 for the year, or 23.4 inspections daily to the credit of each field inspector.

The slight discrepancy shown in the summary of inspection work for the past year is not due to inactiveness on the part of the field force, but rather to the building operations as carried on throughout the District, having been somewhat different from the past several years.

It will be noted that for the most part speculative buildings, which create the largest percentage, have not been localized to such an extent as heretofore, that instead of numerous rows or blocks of buildings, the work has been more widely separated. Under these conditions it becomes necessary to devote more time to the inspection work generally, with suitable allowance made for time consumed in reaching the different jobs.

No accidents of serious nature have occurred, except where due to the carelessness of men employed on the work and such have not been due to faulty or defective construction.

All notices of condemnation with reference to buildings or parts thereof have been consistently complied with and work in general made to conform with the building regulations.

Respectfully submitted.

J. WM. DOWNING,
Assistant Inspector of Buildings.

THE INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1914.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1914:

Visits to new buildings.....	6, 275
Visits to old buildings.....	4, 392
Visits of miscellaneous character.....	678
Total.....	11, 345
Condemnation of buildings or parts thereof.....	124
Cast-iron columns inspected.....	52
Respectfully submitted.	

A. K. SELDEN,

Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1914.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1914:

Visits to new buildings.....	2, 512
Visits to old buildings.....	1, 755
Visits of miscellaneous character.....	636
Total.....	4, 903
Condemnation of buildings or parts thereof.....	84
Respectfully submitted.	

A. M. PROCTOR,

Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1914.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1914:

Visits to new buildings.....	9, 058
Visits to old buildings.....	1, 354
Visits of miscellaneous character.....	104
Total.....	10, 552
Condemnation of buildings or parts thereof.....	38
Respectfully submitted.	

S. G. HUNT,

Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1914.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1914:

Visits to new buildings.....	2, 570
Visits to old buildings.....	3, 069
Visits of miscellaneous character.....	355
Total.....	5, 994
Condemnation of buildings or parts thereof.....	43
Cast-iron columns inspected.....	20
Buildings taken down.....	43
Respectfully submitted.	

F. J. NIEDOMAUSKI,

Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1914.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1914:

Visits to new buildings.....	3, 451
Visits to old buildings.....	1, 833
Visits of miscellaneous character.....	443
Total.....	5, 727
Condemnation of buildings or parts thereof.....	97
Buildings taken down.....	18

During this period 20 days were spent in connection with condemnation of buildings for street-extension and public-park purposes.

Respectfully submitted.

EDWARD KERN,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1914.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1914:

Visits to new buildings.....	4,092
Visits to old buildings.....	4,444
Visits of miscellaneous character.....	944

Total.....	9,480
Condemnation of buildings or parts thereof.....	101

Respectfully submitted.

E. G. CURTIS,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1914.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1914:

Visits to new buildings.....	8,772
Visits to old buildings.....	3,024
Visits of miscellaneous character.....	432

Total.....	12,228
Cast-iron columns inspected.....	10
Condemnation of buildings or parts thereof.....	62

Respectfully submitted.

A. S. J. ATKINSON,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

WASHINGTON, July 1, 1914.

SIR: I have the honor to submit herewith the statement of work performed in accordance with my official duties for year ended June 30, 1914:

Visits to new buildings.....	3,762
Visits to old buildings.....	1,568
Visits of miscellaneous character.....	109

Total.....	5,439
Condemnation of buildings or parts thereof.....	10

Respectfully submitted.

J. B. HAMMOND,
Assistant Inspector of Buildings.

The INSPECTOR OF BUILDINGS.

REPORT OF INSPECTOR OF STEAM BOILERS.

WASHINGTON, September 28, 1914.

SIR: I have the honor to submit through Mr. Morris Hacker, inspector of buildings, the following report for the fiscal year ending June 30, 1914, together with fees received and expenses incurred.

Boilers inspected.....	512
Boilers inspected for District of Columbia.....	59
Boilers condemned.....	7
Cases of scale and deposit.....	20
Defective settings.....	4

Defective steam gauges.....	10
Defective tubes.....	20
Defective shell plates.....	7

Total amount received for 453 inspections.....	\$2, 265. 00
Expenses.....	452. 10

Balance..... 1, 813. 90

Very respectfully,

E. F. VERMILLION,
Inspector of Steam Boilers, District of Columbia.

The INSPECTOR OF BUILDINGS.

REPORT OF THE BOARD OF EXAMINERS OF STEAM ENGINEERS.

WASHINGTON, September 4, 1914.

SIR: We herewith submit to you the report of the board of examiners of steam engineers for the year ending June 30, 1914.

The following table shows the work as it progressed during each month:

	Meetings held.	Applicants.			First class.	Second class.	Third class.	Duplicates.
		Re-ceived.	Ap-proved.	Incom-petent.				
1913.								
July.....	3	7	1	6	1			
August.....	5	23	10	8	1		6	3
September.....	4	6	1	5		1		
October.....	5	12	3	9	1		2	
November.....	4	8	5	3		1	4	
December.....	4	9	5	4		1	3	1
1914.								
January.....	5	9	3	6		1	2	
February.....	4	6	2	4			1	1
March.....	4	12	5	7	1	1	2	1
April.....	4	18	7	11	1		5	1
May.....	5	15	3	12		1	1	1
June.....	4	13	4	9		2	1	1
Total.....	51	138	49	84	5	7	28	9

In addition to examining applicants for steam engineer license the board has also conducted the examination of applicants for automobile and motorcycle operators, a full report of which is being submitted by the secretary of the automobile board.

Our estimate of expenses for the year ending June 30, 1916, is hereto attached, and we respectfully ask that the amount set forth be appropriated.

Respectfully submitted.

E. F. VERMILLION,
H. BOESCH,
JAS. T. FINK,
Board of Examiners.

The INSPECTOR OF BUILDINGS.

REPORT OF THE INSPECTOR OF PLUMBING.

WASHINGTON, October 1, 1914.

SIR: I have the honor to submit the thirty-second annual report of the work performed by the division of plumbing inspection for the fiscal year ending June 30, 1914. The following table shows the work performed by the outside force of assistant inspectors:

Preliminary inspections.....	7, 085
Cast-iron sewers:	
New.....	3, 917
Repairs.....	1, 199

Terra-cotta sewers:	
New.....	54
Repairs.....	481
Main sewers tapped.....	1,240
Rough work in—	
New houses.....	2,051
Old houses.....	2,181
Water services.....	897
Notices served.....	318
Peppermint tests and final inspections.....	3,621
Work not ready for inspection when ordered.....	1,010
Changes ordered in work incorrectly installed.....	389
Special inspections of municipal work.....	92
Gas.....	2,364
Complaints.....	7,894
Total.....	34,793

To the above are to be added inspections by the head of the office of a general nature, 316; special inspections on construction work for the District, 208; and by the principal assistant inspector of plumbing, consisting of inspections on complaints relative to illegal plumbing, examinations of materials, visits to the homes of witnesses, and general police work which does not appear elsewhere, 1,860. The total of these inspections should be added to the above total, which gives a general total of 37,177 inspections made by the entire force. Owing to the decrease in the total number of new buildings built and the very great decrease in repairs and remodeling of plumbing the total number of inspections was less than for the last year, but the outlying sections of the city are rapidly being provided with sewer and water, and this more than makes up for the lesser number of inspections by increases in distances covered.

The following table shows the total inspections made each year since the fiscal year of 1895:

1894-95.....	5,708	1904-5.....	27,337
1895-96.....	8,677	1905-6.....	30,185
1896-97.....	14,112	1906-7.....	32,190
1897-98.....	17,550	1907-8.....	29,547
1898-99.....	17,600	1908-9.....	39,404
1899-1900.....	17,405	1909-10.....	44,953
1900-1901.....	19,965	1910-11.....	46,035
1901-2.....	32,621	1911-12.....	45,875
1902-3.....	25,297	1912-13.....	41,644
1903-4.....	25,637	1913-14.....	37,177

It is estimated that the total cost of new plumbing work installed during the year was \$755,000 and the estimate of value of repairs and remodeling work is \$340,000, both of which were less than for last year.

The total number of inspections made by the outdoor force (34,793) divided by the total number of days in the field gives an average of 17 inspections per day per man, which is, considering the increase in area of the sewer-connected portions of the District, an exceptionally good showing. The greatest number of inspections made by any man in one day was 57.

PER DIEM EMPLOYEES.

With the exception of the men employed as temporary assistant inspectors, under the special appropriation for that purpose, there were no other per diem employees in this office during the past year.

POLICE COURT CASES.

The total number of warrants obtained was 59, divided as follows:

Violations of the plumbing regulations.....	45
Excavations without permits.....	3
Work done by unlicensed gas fitters.....	4
Work done by unlicensed plumbers.....	7
Total.....	59

These cases were disposed of as follows:

Nol-pressed on compliance with commissioners' order.....	33
Personal bonds to comply with regulations.....	4
Forfeited collaterals.....	6
Fined.....	2
Dismissed.....	2
Not apprehended.....	5
Cases pending at close of fiscal year.....	7

Total..... 59

Total fines and forfeitures of collateral, \$50.

OFFICE WORK.

The following table gives the amount of office work performed during the past year and a comparison with that of the five preceding years:

	1909	1910	1911	1912	1913	1914
Official letters.....	1,143	980	2,542	2,340	1,915	1,138
Unofficial letters.....	4,211	7,204	5,240	4,973	4,138	3,679
Indorsements.....	2,761	2,172	2,905	2,204	2,118	1,177
Reports of inspectors.....			9,641	9,659	9,015	10,262
Indexes.....			1,223	1,404	1,673	1,771
Plans prepared.....	34	26	30	33	26	18
Specifications prepared.....	36	30	45	41	34	50
Plans and specifications revised.....	12	4	6	14	1	4
Examinations of plans for new buildings.....	2,860	2,421	2,273	3,256	1,857	1,518
Examination of repair applications.....	2,225	4,466	2,907	2,263	3,138	2,628
Postage stamps used:						
2-cent.....	3,228	3,558	4,300	3,825	3,396	3,962
1-cent.....	192	499	2,297	2,345	1,148	5,208
Postal cards used.....		919	591	89	56	761

COMPULSORY DRAINAGE.

During the past year 61 cases were recommended for compulsory sewer and water connections by the health department and other branches of the District Government. With the exception of a very few cases notices were served. In some instances the legal requirements of service could not be fulfilled; but of those on which such service was completed 14 were torn down, 28 connected with sewer and water by their owners, and in 5 cases sewer and water were provided by the District under contract at a total cost of \$833.18. This amount as divided among the various properties was recommended to the commissioners for assessment. There are several premises now under notice and the completion of these cases will show in the next annual report.

PUBLIC CONVENIENCE STATIONS.

During the latter part of the fiscal year by strict economy in the purchase of supplies and allowing the usual supply stock to be materially reduced in anticipation of the coming fiscal year with its larger appropriation, it was possible to reopen the three stations for the full period of 18 hours per day and they are now operating on a more satisfactory basis.

The total attendance during the year at the station at Seventh Street and Pennsylvania Avenue was 922,210; at the station at Thirteenth-and-a-half Street and Pennsylvania Avenue, 396,710, and at the station at Ninth and K Streets, 560,338, making a total of 1,879,258 persons using these stations. The cash receipts from the 5-cent pay compartments and other small sources of income amounted to \$1,913.87, \$630.39, and \$350.32 for the above locations, being a total of \$2,894.58. The total woman patronage was about 19 per cent of the total and they contributed about 9 per cent of the receipts.

These stations are an unquestioned benefit to the citizens of the District and it is very desirable to increase their number as soon as may reasonably be done. Stations of about the same capacity as the present ones are urgently needed at several of our

most congested centers, notably Ninth and F (or G) Streets, Fifteenth Street and New York Avenue, Wisconsin Avenue and M Street, and Fifteenth and H Streets NE., and near the Peace Monument. Smaller stations where they could be under the supervision of a park attendant or bridge watchman might well be built at the Aqueduct Bridge, Calvert Street Bridge, Seventh Street and Florida Avenue, Washington Circle, and many other similar locations.

The General Government has completed the four park lodges which were under construction during the past year and have placed in service small rooms in them which have toilet facilities. Buildings are also being constructed under the municipal architect in connection with the wholesale market improvement, and these buildings will contain small public toilet rooms in locations where they have been badly needed.

In conclusion I take occasion to acknowledge the conscientious and faithful work of the the inspectors and employees in this office and commend their interests to your earnest consideration.

A. R. MCGONEGAL,
Inspector of Plumbing, District of Columbia.

The INSPECTOR OF BUILDINGS.

REPORT OF THE PLUMBING BOARD.

WASHINGTON, D. C., September 15, 1914.

SIR: I have the honor to submit the following report of the work of the plumbing board for the past fiscal year.

There were held during the year 40 regular and special sessions and consultations for the examination and rating of candidates as master plumbers and gas fitters.

The total number of examinations was 55.

The number of original candidates examined for licensing as master plumbers and gas fitters was 24, of whom 6 passed and 18 failed.

Of those who had been previously examined for licensing as master plumbers and gas fitters 7 passed and 24 failed.

One candidate was examined for licensing as master gas fitter and passed on his first examination.

Examination of candidates appearing before the board two or more times resulted as follows:

Examination.	Passed.	Failed.	Examination.	Passed.	Failed.
Second.....	3	8	Sixth.....	0	2
Third.....	1	5	Seventh.....	0	2
Fourth.....	0	3	Eighth.....	1	1
Fifth.....	2	3			

Many of the candidates developed a lack of knowledge of simple regulation requirements of work in which they are daily engaged as journeymen, apparently depending entirely upon instructions from their employers and inspectors for proper guidance. Some could not differentiate between a plumbing plan and a plumbing section, after repeated efforts. Others had a very limited knowledge of common rules governing proper and safe methods in supplying water to buildings and of removing water and sewage therefrom.

A large number who failed seemed to be of the opinion that their ability to master the physical subdivisions of the trade only was sufficient to pull them through.

(Messrs. P. C. Schaefer and James S. O'Hagan, whose terms as members of the board expired June 30, 1913, were reappointed for two years.)

PETER C. SCHAEFER,
President.

RICHARD A. O'BRIEN,
Secretary.

The INSPECTOR OF BUILDINGS.

REPORT OF THE MUNICIPAL ARCHITECT.

WASHINGTON, October 1, 1914.

SIR: I have the honor to forward herewith the fifth annual report of the office of the municipal architect for the fiscal year ending June 30, 1914.

During the year eight buildings were under construction, as follows:

Building.	Appropriation available.	Cost.	Completed.
Repair and storage building for fire department, North Carolina Avenue, between Sixth and Seventh Streets SE.	July 1, 1913	\$11,265.00	Feb. 25, 1914
Steam heating system.		1,050.00	Mar. 27, 1914
Electric light and power systems.		795.00	Apr. 13, 1914
Alterations and repairs.		1,041.00	June 17, 1914
Alterations and addition to Birney School, No. 127, Nichols Avenue, between Franklin Street and Howard Avenue, Anacostia, D. C.	July 1, 1913	40,000.00	June 6, 1914
Heating and ventilating system.		8,105.00	May 29, 1914
Blackboards.		55.23	
Alterations and addition to Congress Heights School, No. 111, Nichols Avenue and Hamilton Road, Congress Heights, D. C.	July 1, 1913	25,947.00	June 6, 1914
Heating and ventilating system.		7,400.00	May 1, 1914
Gas fixtures.		26.50	
Blackboards.		34.59	
Shelter sheds for farmers' produce market, open space between Tenth and Twelfth, B and Little B Streets, NW	July 1, 1913	11,769.00	Apr. 23, 1914
New Central High School, No. 173, Eleventh and Thirteenth Streets, Florida Avenue, and Clifton Streets NW	June 26, 1912	981,450.00	
Excavating.	July 1, 1913	49,000.00	
Alterations for accommodation of boilers and coal vault for the District of Columbia Jail, reservation No. 13, Nineteenth and B Streets SE	July 1, 1913	4,419.00	Apr. 25, 1914
Two 126-horsepower boilers.		4,098.00	Mar. 18, 1914
Radial brick chimney.		1,685.00	Dec. 23, 1913
Moving and erecting boilers.		647.00	
Breeching for boilers.		499.00	
Pipe brackets.		61.60	
Piping systems.		2,235.00	
Extension colored men's ward and dining room, Home for the Aged and Infirm, Blue Plains, D. C.	July 1, 1911		
Electric work.	July 26, 1912	20,337.00	Nov. 22, 1913
Radial brick chimney.		450.00	Do.
		1,600.00	Dec. 23, 1913
Normal School, No. 169 (colored), Georgia Avenue, between Howard Place and Fairmont Street, NW.	June 26, 1912	188,894.00	Jan. 21, 1914
Electrical work, lighting fixtures, conduits, clock and bell systems.		3,659.00	Feb. 21, 1914
Wire guards, basement windows and doors		385.00	June 2, 1914
Blackboards.		240.00	

PLANS.

The plans for the school buildings have been approved by the assistant to the engineer commissioner, the inspector of buildings, the chief of the fire department, and finally approved by the commissioners. The superintendent of schools has made frequent visits to this office to examine the plans and consult on details while the plans were being prepared. The chief of the fire department and the superintendent of markets have also cooperated in the preparation of plans before their completion. I respectfully suggest that this is the proper way to assist in the preparation of these plans—while they are in the formative state—as the plans, when completed, will have cost, for drafting services and materials, between \$500 and \$5,000, and if changes or alterations are made after their completion, it will result in a loss of time and additional expense. The superintendent of schools and the heads of all departments for whom plans are being prepared have been advised when plans for the several buildings are started and requested to call at any time and make suggestions concerning them.

Minor repairs and improvements.

Building.	Work.	Date of advertisement.
Congress Heights School.....	Heating and ventilating.....	July 1, 1913
Garfield School.....	Two hot-air furnaces.....	July 10, 1913
Western High School.....	Plumbing in basement toilet room.....	July 12, 1913
Normal School No. 169.....	Electric lighting fixtures, conduits, telephone, clock, and bell systems.....	July 18, 1913
Public Library, District of Columbia.....	Repairs to boiler.....	July 28, 1913
Repair and storage building for fire department.....	Construction of building.....	Aug. 1, 1913
Birney School.....	Alterations and construction of addition.....	Aug. 14, 1913
Congress Heights School.....	do.....	Do.
District Jail.....	Alterations in boiler room and coal vault.....	Aug. 16, 1913
Engine House No. 4.....	Installation of iron beams and columns to support second floor.....	Aug. 21, 1913
Henry School.....	Repairing stack.....	Aug. 26, 1913
Powell School.....	Repair of motors.....	Aug. 29, 1913
Cleveland School.....	do.....	Do.
Curtis School.....	Retubing boiler.....	Aug. 30, 1913
Portable school building.....	Hauling from Hubbard School to site of Park View School.....	Sept. 16, 1913
Home for Aged and Infirm.....	Construction of radial brick chimney.....	Sept. 26, 1913
District Jail.....	do.....	Do.
Do.....	Installation of boilers (bids rejected).....	Oct. 14, 1913
Birney School.....	Heating and ventilating.....	Oct. 17, 1913
Repair and storage building for fire department.....	Steam heating system.....	Do.
Tuberculosis Hospital.....	Vertical boilers (no bids).....	Do.
Public Crematorium.....	Installation furnace.....	Oct. 28, 1913
Tuberculosis Hospital.....	Vertical boilers (bids in excess of appropriation); ordered purchased in open market.....	Oct. 30, 1913
District Jail.....	Moving and erecting 2 boilers from old work-house to new boiler plant.....	Oct. 31, 1913
New Central High School.....	Construction building (bids rejected).....	Nov. 4, 1913
Eastern High School.....	Grill work in windows.....	Nov. 7, 1913
District Jail.....	Two 125-horsepower boilers.....	Nov. 8, 1913
Police Court.....	Addition to electric lighting system.....	Dec. 2, 1913
Eastern High School.....	Retubing 2 boilers.....	Dec. 9, 1913
Farmers' Produce Market.....	Construction of shelter sheds.....	Dec. 13, 1913
Tuberculosis Hospital.....	Installation vertical boilers.....	Dec. 30, 1913
John Eaton School.....	Installation stereopticon circuit.....	Jan. 9, 1914
Engine House No. 6.....	Concrete and brick work.....	Jan. 12, 1914
Do.....	Installation ironwork in new fireproof floor.....	Jan. 13, 1914
Repair and storage building for fire department.....	Electric light and power systems.....	Jan. 28, 1914
New Central High School.....	Construction of building.....	Feb. 5, 1914
Do.....	Excavation for building.....	Do.
Normal School No. 169.....	Wire guards for basement windows.....	Mar. 27, 1914
District Jail.....	Installation of breeching for boilers.....	Mar. 30, 1914
Force School.....	Ventilating system.....	Apr. 6, 1914
Repair and storage building for fire department.....	Alterations and repairs.....	Apr. 17, 1914
District Jail.....	Installation pipe brackets.....	Apr. 15, 1914
Do.....	Installation piping system, etc.....	Apr. 28, 1914
Engine House No. 25.....	One cast-iron boiler.....	May 9, 1914
Congress Heights School.....	Installation of gas fixtures.....	May 20, 1914
District schools.....	Repairs to furnaces.....	May 26, 1914
Henry D. Cooke School.....	Installation hot-air furnaces.....	May 21, 1914
Lucretia Mott School.....	do.....	Do.
Engine House No. 20.....	Installation boiler and radiators.....	June 3, 1914
Tuberculosis Hospital.....	Covering for boilers and breeching.....	June 10, 1914
Birney School.....	Removal of old frame building (one bid; rejected).....	Do.
Burrville School.....	Enlarging outhouses.....	June 23, 1914
Webster School.....	New steam heating system.....	June 29, 1914

In the annual reports for previous years the cubic cost of District buildings has been given from the year 1897 to the year 1913, inclusive. The cost of the buildings erected during the past fiscal year, all of which were designed by the municipal architect, is as follows:

Cubic cost of buildings.

Building—Name, number, description, and location.	Cost.	Cubic contents.	Cost per cubic foot.	Heating plan.
Repair and storage building for fire department, North Carolina Avenue between Sixth and Seventh Streets SE.	\$14,151	<i>Feet.</i> 151,533	<i>Cents.</i> 9.33	Steam, direct.
Alterations and addition to Birney School, No. 127, Nichols Avenue between Franklin Street and Howard Avenue, Anacostia, D. C.	48,105	332,820	14.45	Steam, direct, and fan system.

Cubic cost of buildings—Continued.

Building—Name, number, description, and location.	Cost.	Cubic contents.	Cost per cubic foot.	Heating plan.
		<i>Feet.</i>	<i>Cents.</i>	
Alterations and addition to Congress Heights School, No. 111, Nichols Avenue and Hamilton Road, Congress Heights, D. C.	33,347	238,399	13.98	Steam, direct, and fan system.
Shelter sheds for farmers' produce market, open space between Tenth and Twelfth, B and Little B Streets, N. W.	11,769	98,000	12.00	
Alterations for accommodation of boilers and coal vault for District of Columbia Jail, reservation No. 13, Nineteenth and B Streets SE.	4,419	31,762	15.47	

The plans for all the buildings in the foregoing table were prepared in the office of the municipal architect. The question was raised in August, 1909, as to the authority to employ architects to assist in the preparation of plans and the Comptroller of the Treasury rendered a decision August 18, 1909, to the effect that the duties of the municipal architect are supervisory and that he is permitted to employ outside architects to assist in the preparation of plans, and that he is to direct any expenditures necessary for and incidental to the preparation of such plans and the construction of the buildings.

HEATING PLANTS AND FUEL.

In the fall of 1909 this office instituted an inquiry as to the consumption of fuel in the public-school buildings, to develop any defects which might exist in the heating plants. For many years the expenditure for fuel and lighting has been about \$90,000 per annum; the municipal architect addressed an inquiry to the purchasing officer of the District as to the cost of fuel for each plant. The auditor of the District thereupon prepared a table showing the expenditure for fuel in the several school buildings for four consecutive years. It was thus ascertained that the consumption of fuel in buildings of practically the same plan and design and similar with respect to arrangement and type of heating apparatus varied greatly; in some instances an 8-room building appeared to have consumed more than twice as much fuel as a similar building with the same size and type of apparatus. With this table as a basis, tests were made as to the capacities for fuel consumption at several of the buildings where the amount consumed appeared to be excessive. The following year a heating, ventilating, and sanitary engineer was employed and the efficiency of the heating plants was more thoroughly inquired into.

The heating, ventilating, and sanitary engineer of this office has designed several plants with down-draft boilers and made other changes to encourage the use of soft coal and at the same time to avoid the smoke nuisance. A central heating plant has been constructed with automatic stokers, guaranteed to prevent objectionable smoke while using soft coal. The grates in some plants are undergoing changes to better adapt them for soft coal, and other plants of this kind have been recommended and included in the estimates for appropriations.

The M Street central heating plant shows a saving over the yearly average cost of fuel for four years prior to the construction of the plant of \$846.05 per year. The Dent School, where down-draft boilers were installed, shows a saving of \$452.32 per year. The Reno School shows a saving of \$291.30 per year on the hard-coal basis. The reports from the auditor's office show a saving of \$12,000 a year on the cost of fuel, notwithstanding the fact that there are several buildings added each year.

Services, annual and per diem (exclusive of blue printer), for year beginning July 1, 1913, and ending June 30, 1914.

On annual roll.....	\$12,000.00
On per diem roll:	
Inspectors.....	5,978.25
Draftsmen.....	2,073.25
Copyists.....	1,242.25
Total cost of services for year	21,293.75

Recommendation has been made in the annual estimates that the blue printer be placed on an annual salary instead of his compensation being charged to numerous appropriations and their reimbursement depending upon repay vouchers. It sometimes happens that certain branches of the District government require blue prints for use in obtaining proposals and for working drawings without any appropriation properly chargeable for such work. Under the present arrangements the offices are each charged with the cost of the work in proportion to the area of the blue printing done for them, but the cost of materials and the wastage can hardly be equitably distributed, and the cost of repairs of the blue-printing machine is paid for from the contingent fund of the engineer department. The placing of the blue printer on an annual salary and providing for the maintenance of the machine would simplify this branch of the work and save a large amount of clerical labor and uncertainty as to the proper charges.

COST OF BUILDING REPAIRS.

In the annual report of last year and the year before the costs of repairs were given in comparison with such costs in other cities of nearly equal importance and size. These costs have been reduced to the cost per square foot of floor surface, cost per building, per room, and per pupil on average attendance. The cost has also been figured in ratio to the entire costs of the schools in this and other cities, and from these figures it appears that Washington is next to the lowest in cost of repairs, notwithstanding the fact that we are here at a disadvantage in cost comparisons for the reason that in other cities the actual "repairs"—that is, replenishments—are paid from one fund, and the "improvements"—that is, enlargements or changes or betterments—are paid from another fund, while here all those things are charged to "repairs." This, of course, makes it appear at first sight that our repairs cost more than they really do.

I beg to call attention to the form used by the Bureau of the Census for collecting data concerning the cost of "repairs" separate from the "outlays" and the "equipment."

The report of the Bureau of Education for 1911 and 1912, issued in 1913, gives very extensive tables showing the relative cost of the schools and cost of buildings, repairs, and betterments in most all cities of 10,000 inhabitants or over, but it was a source of surprise and disappointment to find that such figures are not given in the report for the National Capital.

I submit herewith a statement from the superintendent of repairs showing the cost of repairs in detail on each and every building; also showing what proportion of the funds were spent for labor and what for materials.

In estimating for appropriations for repairs I would invite attention to the fact that within the past three years the cost of labor has advanced about 20 per cent, and we have notice from one branch of the building trade that wages will be advanced 10 per cent next August. If this is taken into consideration, with the fact that for the past five years the buildings have increased at the rate of about 10 a year, it will partially account for the increase in the appropriation for repairs. Certain building materials have also advanced in cost, especially lumber, and I trust that a sufficient appropriation will be made for the repair of the District buildings.

Respectfully submitted.

SNOWDEN ASHFORD,
Municipal Architect.

Capt. R. G. POWELL,
Corps of Engineers, United States Army,
Assistant to Engineer Commissioner District of Columbia.

Repairs and improvements to engine houses and grounds, 1914.

[Appropriation, \$16,000.]

Class of work.	Labor.	Material.	Contract.	Total.
No. 1 engine house:				
Carpentering.....	\$486.99	\$254.57	.....	\$741.56
Tinning.....	75.03	66.03	.....	141.06
Plumbing.....	109.12	205.01	.....	314.13
Painting and glazing.....	119.86	46.75	.....	166.61
Miscellaneous.....		.74	.....	.74
Total.....	791.00	573.10	.....	1,364.10

Repairs and improvements to engine houses and grounds—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
No. 2 engine house:				
Carpentering.....	\$76.56	\$31.04	.....	\$107.60
Plumbing.....	7.50	2.12	.....	9.62
Painting and glazing.....	.44	.54	.....	.98
Steam fitting.....	31.66	67.73	.....	99.39
Miscellaneous.....	10.80	.....	.....	10.80
Total.....	126.96	101.43	.....	228.39
No. 4 engine house:				
Carpentering.....	653.88	483.55	.....	1,137.43
Tinning.....	86.07	124.81	.....	210.88
Heating.....	.....	1.00	.....	1.00
Plumbing.....	12.75	4.61	.....	17.36
Painting and glazing.....	33.69	18.76	.....	52.45
Miscellaneous.....	25.60	19.10	\$300.00	344.70
Total.....	811.99	651.83	300.00	1,763.82
No. 5 engine house:				
Carpentering.....	210.24	125.87	.....	336.11
Heating.....	1.00	.60	.....	1.60
Plumbing.....	12.81	16.12	.....	28.93
Painting and glazing.....	21.88	12.81	.....	34.69
Total.....	245.93	155.40	.....	401.33
No. 6 engine house:				
Tinning.....	6.44	8.03	.....	14.47
Carpentering.....	.....	.78	.....	.78
Heating.....	.50	.22	.....	.72
Plumbing.....	.25	.....	.....	.25
Painting and glazing.....	2.63	.88	.....	3.51
Miscellaneous.....	.....	.75	588.00	588.75
Total.....	9.82	10.66	588.00	608.48
No. 7 engine house:				
Carpentering.....	306.78	158.66	.....	465.44
Tinning.....	21.97	35.02	.....	56.99
Plumbing.....	14.37	11.07	.....	25.44
Painting and glazing.....	35.00	18.51	.....	53.51
Steam fitting.....	.93	.07	.....	1.00
Miscellaneous.....	1.56	.75	.....	2.31
Total.....	380.61	224.08	.....	604.69
No. 8 engine house:				
Carpentering.....	71.46	43.62	.....	115.08
Tinning.....	9.88	9.50	.....	19.38
Plumbing.....	24.19	7.27	.....	31.46
Painting and glazing.....	16.75	8.38	.....	25.13
Total.....	122.28	68.77	.....	191.05
No. 9 engine house:				
Carpentering.....	94.76	42.16	.....	136.92
Tinning.....	40.78	27.17	.....	67.95
Plumbing.....	2.50	4.09	.....	6.59
Painting and glazing.....	109.31	37.07	.....	146.38
Steam fitting.....	.....	1.11	.....	1.11
Total.....	247.35	111.60	.....	358.95
No. 10 engine house:				
Carpentering.....	122.12	46.65	.....	168.77
Tinning.....	14.03	3.57	.....	17.60
Plumbing.....	17.51	8.73	.....	26.24
Painting and glazing.....	9.51	4.34	.....	13.85
Total.....	163.17	63.29	.....	226.46
No. 11 engine house:				
Carpentering.....	58.29	38.48	.....	96.77
Tinning.....	18.72	11.13	.....	29.85
Plumbing.....	28.55	25.44	.....	53.99
Painting and glazing.....	5.07	1.54	.....	6.61
Total.....	110.63	76.59	.....	187.22

Repairs and improvements to engine houses and grounds—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
No. 12 engine house:				
Carpentering.....	\$394.09	\$239.58	.....	\$633.67
Tinning.....	8.25	6.50	.....	14.75
Heating.....	.....	2.25	.....	2.25
Plumbing.....	3.25	10.94	.....	14.19
Painting and glazing.....	23.18	15.84	.....	39.02
Total.....	428.77	275.11	.....	703.88
No. 13 engine house:				
Carpentering.....	214.17	261.11	.....	475.28
Plumbing.....	7.94	2.27	.....	10.21
Painting and glazing.....	135.38	55.52	.....	190.90
Steam fitting.....	12.72	.39	.....	13.11
Miscellaneous.....	.....	.....	\$41.65	41.65
Total.....	370.21	319.29	41.65	731.15
No. 14 engine house:				
Carpentering.....	54.69	57.76	.....	112.45
Tinning.....	98.45	110.08	.....	208.53
Heating.....	16.75	5.97	.....	22.72
Plumbing.....	2.44	.61	.....	3.05
Painting and glazing.....	.63	1.18	.....	1.81
Total.....	172.96	175.60	.....	348.56
No. 15 engine house:				
Carpentering.....	52.01	17.01	.....	69.02
Tinning.....	6.88	.79	.....	7.67
Plumbing.....	42.40	5.90	.....	48.30
Painting and glazing.....	5.20	3.88	.....	9.08
Miscellaneous.....	.....	.01	.....	.01
Total.....	106.49	27.59	.....	134.08
No. 16 engine house:				
Carpentering.....	22.00	5.24	.....	27.24
Tinning.....	158.92	214.09	.....	373.01
Heating.....	.....	2.25	.....	2.25
Plumbing.....	10.82	3.09	.....	13.91
Painting and glazing.....	4.94	2.05	.....	6.99
Miscellaneous.....	3.15	.....	.....	3.15
Total.....	199.83	226.72	.....	426.55
No. 17 engine house:				
Carpentering.....	63.94	23.94	.....	87.88
Tinning.....	12.77	14.84	.....	27.61
Plumbing.....	2.13	.....	.....	2.13
Painting and glazing.....	10.19	5.25	.....	15.44
Total.....	89.03	44.03	.....	133.06
No. 18 engine house:				
Carpentering.....	203.96	135.93	.....	339.89
Tinning.....	14.37	12.12	.....	26.49
Heating.....	.....	2.50	.....	2.50
Plumbing.....	4.01	1.77	.....	5.78
Painting and glazing.....	.44	.95	.....	1.39
Steam fitting.....	.66	.....	.....	.66
Miscellaneous.....	.50	.....	.....	.50
Total.....	223.94	153.27	.....	377.21
No. 19 engine house:				
Carpentering.....	27.38	53.32	.....	80.70
Tinning.....	86.00	87.69	.....	173.69
Heating.....	.....	2.50	.....	2.50
Plumbing.....	7.13	2.76	.....	9.89
Painting and glazing.....	7.44	3.90	.....	11.34
Total.....	127.95	150.17	.....	278.12
No. 20 engine house:				
Carpentering.....	188.91	73.35	.....	262.26
Tinning.....	20.81	28.98	.....	49.79
Heating.....	8.69	6.53	.....	15.22
Plumbing.....	17.31	2.29	.....	19.60
Painting and glazing.....	19.51	10.65	.....	30.16
Total.....	255.23	121.80	.....	377.03

Repairs and improvements to engine houses and grounds, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
No. 21 engine house and No. 9 truck house:				
Steam fitting.....	\$4.34	\$0.08	.....	\$4.42
Carpentering.....	138.60	226.98	.....	365.58
Tinning.....	23.50	17.07	.....	40.57
Plumbing.....	1.75	.54	.....	2.29
Painting and glazing.....	9.25	2.27	.....	11.52
Miscellaneous.....	.....	.57	.....	.57
Total.....	177.44	247.51	.....	424.95
No. 22 engine house:				
Carpentering.....	332.30	196.83	.....	529.13
Tinning.....	11.50	5.58	.....	17.08
Plumbing.....	47.13	79.14	.....	126.27
Heating.....	.....	.02	.....	.02
Painting and glazing.....	139.63	54.09	.....	193.72
Total.....	530.56	335.66	.....	866.22
No. 23 engine house:				
Carpentering.....	44.00	30.18	.....	74.18
Tinning.....	3.59	.46	.....	4.05
Plumbing.....	4.81	.51	.....	5.32
Total.....	52.40	31.15	.....	83.55
No. 24 engine house:				
Carpentering.....	.....	.73	.....	.73
Plumbing.....	6.49	.68	.....	7.17
Painting and glazing.....	50.00	16.16	.....	66.16
Steam fitting.....	5.47	27.30	.....	32.77
Miscellaneous.....	.....	.20	.....	.20
Total.....	61.96	45.07	.....	107.03
No. 25 engine house and No. 8 truck house:				
Carpentering.....	340.97	121.41	.....	462.38
Painting and glazing.....	1.82	1.37	.....	3.19
Steam fitting.....	165.83	145.12	.....	310.95
Total.....	508.62	267.90	.....	776.52
No. 26 engine house:				
Carpentering.....	89.41	62.39	.....	151.80
Plumbing.....	6.25	5.94	.....	12.19
Painting and glazing.....	15.69	5.99	.....	21.68
Miscellaneous.....	1.50	.....	.....	1.50
Total.....	112.85	74.32	.....	187.17
No. 1 chemical house:				
Carpentering.....	262.65	158.71	.....	421.36
Tinning.....	8.25	3.33	.....	11.58
Plumbing.....	5.31	.05	.....	5.36
Total.....	276.21	162.09	.....	438.30
No. 2 chemical house:				
Carpentering.....	47.50	32.87	.....	80.37
Tinning.....	19.25	3.84	.....	23.09
Plumbing.....	8.31	4.49	.....	12.80
Painting and glazing.....	.....	1.23	.....	1.23
Steam fitting.....	1.93	.39	.....	2.32
Miscellaneous.....	19.99	6.08	.....	26.07
Total.....	96.98	48.90	.....	145.88
No. 3 chemical house:				
Plumbing.....	1.50	.....	.....	1.50
No. 1 truck house:				
Carpentering.....	11.31	42.14	.....	53.45
Tinning.....	55.68	68.10	.....	123.78
Heating.....	1.44	.87	.....	2.31
Plumbing.....	7.63	3.30	.....	10.93
Painting and glazing.....	.87	.63	.....	1.50
Total.....	76.93	115.04	.....	191.97

Repairs and improvements to engine houses and grounds, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
No. 2 truck house:				
Carpentering.....	\$159.44	\$78.08	.....	\$237.52
Tinning.....	17.46	8.93	.....	26.39
Plumbing.....	8.06	2.09	.....	10.15
Painting and glazing.....	46.75	16.32	.....	63.07
Miscellaneous.....	.....	.08	.....	.08
Total.....	231.71	105.50	.....	337.21
No. 3 truck house:				
Carpentering.....	55.71	64.04	.....	119.75
Tinning.....	61.13	59.02	.....	120.15
Plumbing.....	4.06	.45	.....	4.51
Painting and glazing.....	.56	4.31	.....	4.87
Total.....	121.46	127.82	.....	249.28
No. 4 truck house:				
Carpentering.....	113.58	83.38	.....	196.96
Tinning.....	3.75	3.50	.....	7.25
Plumbing.....	2.43	1.38	.....	3.81
Painting and glazing.....	35.22	12.23	.....	47.45
Total.....	154.98	100.49	.....	255.47
No. 5 truck house:				
Carpentering.....	94.28	83.03	.....	177.31
Plumbing.....	26.05	16.29	.....	42.34
Painting and glazing.....	195.65	65.90	.....	261.55
Total.....	315.98	165.22	.....	481.20
No. 6 truck house:				
Carpentering.....	79.94	45.93	.....	125.87
Tinning.....	2.93	.....	.....	2.93
Heating.....	101.79	185.17	.....	286.96
Plumbing.....	2.25	.97	.....	3.22
Painting and glazing.....	51.75	20.77	.....	72.52
Miscellaneous.....	.11	.....	.....	.11
Total.....	238.77	252.84	.....	491.61
No. 7 truck house:				
Carpentering.....	143.65	117.50	.....	261.15
Tinning.....	11.65	7.81	.....	19.46
Plumbing.....	17.13	17.92	.....	35.05
Painting and glazing.....	3.94	3.03	.....	6.97
Steam fitting.....	6.76	23.38	.....	30.14
Total.....	183.13	169.64	.....	352.77
No. 10 truck house:				
Carpentering.....	36.75	34.38	.....	71.13
Tinning.....	11.00	5.78	.....	16.78
Plumbing.....	.....	2.57	.....	2.57
Painting and glazing.....	4.00	1.84	.....	5.84
Total.....	51.75	44.57	.....	96.32

SUMMARY.

Total amount of labor accounted for on written orders.....	\$8,177.38
Total amount of material accounted for on written orders.....	5,824.05
Total amount of minor contracts and shop orders.....	929.65
Miscellaneous time and material used in shop on written orders for various engines.....	375.20
Pro rata share of purchase of harness.....	8.25
Gas consumed in machine shop.....	5.24
Allotment to sand wharf.....	3.99
Allotment to purchasing office (for inspector).....	20.00
Allotment to engineer stables (forage, etc., for 9 months).....	214.24
Allotment to U Street stables (new roof).....	7.54
Forage for July, August, and September.....	47.62
Contract for new boilers at No. 25 engine house.....	370.00
Unexpended.....	16.84
Total.....	16,000.00

Repairs and improvements to police stations and grounds, 1914.

[Appropriation, \$5,500.]

Class of work.	Labor.	Material.	Total.
No. 1 police station:			
Carpentering.....	\$56.34	\$21.24	\$77.58
Tinning.....	100.51	202.41	302.92
Heating.....	11.50	2.50	14.00
Plumbing.....	27.89	11.95	39.84
Painting and glazing.....	3.13	1.15	4.28
Steam fitting.....	5.35	2.34	7.69
Total.....	204.72	241.59	446.31
No. 2 police station:			
Carpentering.....	54.20	34.78	88.98
Tinning.....	43.00	90.75	133.75
Plumbing.....	18.94	2.48	21.42
Painting.....	8.44	3.63	12.07
Total.....	124.58	131.64	256.22
No. 3 police station:			
Carpentering.....	78.00	25.50	103.50
Heating.....	2.21	4.60	6.81
Plumbing.....	23.82	4.82	28.64
Painting and glazing.....	86.38	35.43	121.81
Total.....	190.41	70.35	260.76
No. 4 police station:			
Carpentering.....	200.66	84.06	284.72
Tinning.....	41.22	86.85	128.07
Heating.....	8.75	73.77	82.52
Plumbing.....	21.38	44.59	65.97
Painting and glazing.....	16.38	5.61	21.99
Total.....	288.39	294.88	583.27
No. 5 police station:			
Carpentering.....	38.57	19.49	58.06
Heating.....		.95	.95
Plumbing.....	52.87	38.01	90.88
Painting and glazing.....	23.88	7.28	30.66
Steam fitting.....	15.53	35.99	51.52
Total.....	130.35	101.72	232.07
No. 6 police station:			
Carpentering.....	84.07	17.75	101.82
Tinning.....	58.63	98.17	156.80
Heating.....	22.50	21.41	43.91
Plumbing.....	.75		.75
Painting and glazing.....	10.13	5.23	15.36
Steam fitting.....	23.84	12.67	36.51
Total.....	199.92	155.23	355.15
No. 7 police station:			
Carpentering.....	21.25	1.87	23.12
Tinning.....	62.85	62.19	125.04
Heating.....	2.96	20.20	23.16
Plumbing.....	13.80	.07	13.87
Painting and glazing.....	4.94	.88	5.82
Total.....	105.80	85.21	191.01
No. 8 police station:			
Carpentering.....	156.19	89.18	245.37
Tinning.....	30.32	52.46	82.78
Heating.....		2.45	2.45
Plumbing.....	37.20	17.22	54.42
Painting and glazing.....	17.81	17.50	35.41
Steam fitting.....	.62	1.78	2.30
Total.....	242.14	180.59	422.73
No. 9 police station:			
Carpentering.....	129.15	53.79	182.94
Tinning.....	38.46	19.54	58.00
Plumbing.....	39.45	12.48	51.93
Painting and glazing.....	8.88	4.88	13.76
Total.....	215.94	90.69	306.63

Repairs and improvements to police stations and grounds, 1914—Continued.

Class of work.	Labor.	Material.	Total.
No. 10 police station:			
Carpentering.....	\$102.57	\$35.71	\$138.28
Tinning.....	14.00	1.23	15.23
Heating.....	.44		.44
Plumbing.....	38.24	2.95	41.19
Painting and glazing.....	92.44	24.33	116.77
Steam fitting.....	2.63		2.63
Miscellaneous.....	1.25	.20	1.45
Total.....	251.57	64.42	315.99
No. 11 police station:			
Carpentering.....	13.50	13.66	27.16
Tinning.....	2.74	.32	3.06
Plumbing.....	3.62		3.62
Total.....	19.86	13.98	33.84
Tenley substation:			
Carpentering.....	38.13	16.51	54.64
Painting and glazing.....	4.18	4.33	8.51
Total.....	42.31	20.84	63.15
Harbor precinct:			
Tinning.....	8.74	5.10	13.84
Plumbing.....	3.25	.80	4.05
Painting and glazing.....	.88	.29	1.17
Total.....	12.87	6.19	19.06

SUMMARY.

Total amount of labor accounted for on written orders.....	\$2,028.86
Total amount of material accounted for on written orders.....	1,457.33
Miscellaneous time and material used in shop on written orders for various stations.....	530.93
Pro rata share of purchase of harness.....	4.50
Gas consumed in machine shop.....	3.23
Allotment to sand wharf.....	1.54
Allotment to purchasing office (for inspector).....	10.00
Allotment to engineer stables (forage, etc., for 9 months).....	82.39
Forage for July, August, and September.....	18.31
Allotment to U Street stables (new roof).....	2.90
Amount of stock on hand.....	1,339.22
Unexpended.....	20.79
Total.....	5,500.00

Contingent and miscellaneous expenses, District of Columbia, 1914, motor truck, superintendent of repairs.

Appropriation.....	\$480.00
Expended.....	479.74
Unexpended.....	.26

Courts, District of Columbia, 1914, police court, repairs to building.

Appropriation.....	\$1,000.00
Expended.....	990.76
Unexpended.....	9.24

Expended from various allotments made to this office from other departments for repairs to their respective buildings, during the fiscal year 1914..... 12,521.69

182 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914.

[Appropriation, \$100,000.]

Class of work.	Labor.	Material.	Contract.	Total.
Abbot School, No. 27:				
Carpentering.....	\$47.97	\$105.31		\$153.28
Tinning.....	35.90	20.48		56.38
Plumbing.....	1.63	.01		1.64
Painting and glazing.....	17.84	10.86		28.70
Total.....	103.34	136.66		240.00
Adams School, No. 65:				
Carpentering.....	65.77	100.16		165.93
Tinning.....	27.57	25.74		53.31
Heating.....		46.58	\$169.73	216.31
Plumbing.....	7.38	2.16		9.54
Painting and glazing.....	15.19	8.85		24.04
Miscellaneous.....		.74		.74
Total.....	115.91	184.23	169.73	469.87
Addison School, No. 53:				
Carpentering.....	94.59	190.80		285.39
Tinning.....	66.68	134.49		201.17
Heating.....			15.34	15.34
Plumbing.....	7.56	.61		8.17
Painting and glazing.....	12.94	5.51		18.45
Total.....	181.77	331.41	15.34	528.52
Ambush School, No. 79:				
Carpentering.....	98.47	25.16		123.63
Tinning.....	23.81	17.23		41.04
Heating.....		12.97	243.12	256.09
Plumbing.....	17.50	1.58		19.08
Painting and glazing.....	131.19	35.64		166.83
Miscellaneous.....		1.74		1.74
Total.....	270.97	94.32	243.12	608.41
Amidon School, No. 42:				
Carpentering.....	188.60	159.97		348.57
Tinning.....	166.19	40.82		207.01
Plumbing.....	19.24	3.45		22.69
Painting and glazing.....	31.50	11.02		42.52
Gas engine.....	33.26	7.02		40.28
Miscellaneous.....	1.31	1.00		2.31
Total.....	440.10	223.28		663.38
Armstrong Manual Training School, No. 129:				
Carpentering.....		.17		.17
Tinning.....	36.00	12.00		48.00
Plumbing.....	51.79	11.70		63.49
Painting and glazing.....	20.93	16.84		37.77
Steam fitting.....		49.66		49.66
Miscellaneous.....	27.73	10.08		37.81
Total.....	136.45	100.45		236.90
Arthur School, No. 70:				
Carpentering.....	56.44	19.44		75.88
Tinning.....	11.00	3.84		14.84
Heating.....			68.05	68.05
Plumbing.....	4.37	.24		4.61
Painting and glazing.....	22.14	13.64		35.78
Total.....	93.95	37.16	68.05	199.16
Banneker School, No. 39:				
Carpentering.....	224.98	491.48		716.46
Tinning.....	10.57	6.21		16.78
Heating.....	4.31	87.55	28.91	120.77
Plumbing.....	16.06	.70		16.76
Painting and glazing.....	15.24	8.86		24.10
Gas engine.....	19.13	10.29		29.42
Miscellaneous.....		1.00		1.00
Total.....	290.29	606.09	28.91	925.29

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Bell School, No. 78:				
Carpentering.....	\$59.73	\$21.90	.....	\$81.63
Tinning.....	140.47	175.91	.....	316.38
Heating.....	.....	.....	\$14.49	14.49
Plumbing.....	18.62	2.37	.....	20.99
Painting and glazing.....	7.56	6.96	.....	14.52
Total.....	226.38	207.14	14.49	448.01
Bennings School, No. 48:				
Carpentering.....	117.04	19.86	.....	136.90
Tinning.....	64.53	38.48	.....	103.01
Plumbing.....	6.50	2.23	.....	8.73
Painting and glazing.....	63.81	19.12	.....	82.93
Steam fitting.....	4.38	.....	.....	4.38
Total.....	256.26	79.69	.....	335.95
Berret School No. 66:				
Carpentering.....	9.94	3.24	.....	13.18
Tinning.....	12.25	6.76	.....	19.01
Heating.....	.....	7.75	78.35	86.10
Plumbing.....	7.31	.03	.....	7.34
Painting and glazing.....	13.56	4.08	.....	17.64
Total.....	43.06	21.86	78.35	143.27
Birney School, No. 127:				
Carpentering.....	1.50	.40	.....	1.90
Tinning.....	89.47	27.92	.....	117.39
Heating.....	.....	.....	5.81	5.81
Plumbing.....	8.50	1.34	.....	9.84
Painting and glazing.....	12.03	5.83	.....	18.46
Gas engine.....	20.09	3.74	.....	23.83
Miscellaneous.....	2.50	1.74	.....	4.24
Total.....	134.69	40.17	5.81	181.47
Blair School, No. 50:				
Carpentering.....	108.47	114.46	.....	222.93
Tinning.....	12.07	.32	.....	12.39
Heating.....	2.60	1.47	15.50	19.57
Plumbing.....	8.62	1.98	.....	10.60
Painting and glazing.....	16.82	4.45	.....	21.27
Gas engine.....	9.00	5.56	.....	14.56
Total.....	157.58	128.24	15.50	301.32
Blake School, No. 61:				
Carpentering.....	35.56	87.37	.....	122.93
Tinning.....	2.96	.89	.....	3.85
Plumbing.....	101.76	62.97	.....	164.73
Painting and glazing.....	20.93	11.65	.....	32.58
Grading.....	.50	.....	.....	.50
Miscellaneous.....	.....	1.74	.....	1.74
Total.....	161.71	164.62	.....	326.33
Blow School, No. 145:				
Carpentering.....	15.30	3.27	.....	18.57
Tinning.....	5.75	2.59	.....	8.34
Heating.....	.....	.....	13.95	13.95
Plumbing.....	17.81	1.40	.....	19.21
Painting and glazing.....	31.21	14.96	.....	46.17
Motor.....	3.37	.57	.....	3.94
Miscellaneous.....	10.88	.56	.....	11.44
Total.....	84.32	23.35	13.95	121.62
A. Bowen School, No. 109:				
Heating.....	.....	11.32	39.60	50.92
Plumbing.....	20.32	3.95	.....	24.27
Painting and glazing.....	13.00	6.47	.....	19.47
Gas engine.....	14.75	18.64	.....	33.39
Total.....	48.07	40.38	39.60	128.05

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
S. J. Bowen School, No. 123:				
Carpentering.....	\$5.00			\$5.00
Tinning.....	12.15	\$8.46		20.61
Plumbing.....	1.75			1.75
Painting and glazing.....	11.57	13.29		24.86
Steam fitting.....	7.03	.66		7.69
Miscellaneous.....	6.25	1.12		7.37
Total.....	43.75	23.53		67.28
Bradley School, No. 60:				
Plumbing.....	6.75	.45		7.20
Carpentering.....	88.54	33.75		122.29
Tinning.....	10.31	3.34		13.65
Heating.....			\$6.04	6.04
Painting and glazing.....	29.93	10.63		40.56
Miscellaneous.....		1.00		1.00
Total.....	135.53	49.17	6.04	190.74
Brent School, No. 46:				
Carpentering.....	50.14	38.84		88.98
Tinning.....	218.63	179.50		398.13
Heating.....		111.60	10.00	121.60
Plumbing.....	45.94	4.18		50.12
Painting and glazing.....	348.97	48.53		397.50
Gas engine.....	21.25	11.94		33.19
Miscellaneous.....	1.41	.03		1.44
Total.....	686.34	394.62	10.00	1,090.96
Briggs School, No. 75:				
Carpentering.....	43.19	13.13		56.32
Tinning.....	21.72	16.26		37.98
Heating.....	3.75	.33	47.12	51.20
Plumbing.....	25.89	8.90		34.79
Painting and glazing.....	1.75	4.23		5.98
Total.....	96.30	42.85	47.12	186.27
Brightwood School, No. 104:				
Carpentering.....	113.30	93.05		206.35
Tinning.....	2.87	2.35		5.22
Plumbing.....	2.75	.68		3.43
Painting and glazing.....	28.74	11.51		40.25
Steam fitting.....	125.67	12.21		137.88
Miscellaneous.....	13.19	6.48		19.67
Total.....	286.52	126.28		412.80
Brightwood Park School, No. 151:				
Carpentering.....	5.56	.47		6.03
Tinning.....	26.28	12.39		38.67
Heating.....		1.01		1.01
Plumbing.....	26.55	3.85		30.40
Painting and glazing.....	12.13	5.16		17.29
Gas engine.....	3.38	3.69		7.07
Total.....	73.90	26.57		100.47
Brookland School, No. 103:				
Carpentering.....	119.16	316.33		435.49
Tinning.....	232.13	339.08		571.21
Plumbing.....	7.00	.25		7.25
Painting and glazing.....	11.13	6.12		17.25
Steam fitting.....	27.41	23.27		50.68
Grading.....	7.50	6.73		14.23
Miscellaneous.....		1.74		1.74
Total.....	404.33	693.52		1,097.85
Bruce School, No. 112:				
Carpentering.....	117.13	163.12		280.25
Tinning.....	14.26	7.35		21.61
Heating.....	2.75	10.31	6.28	19.34
Plumbing.....	5.37			5.37
Painting and glazing.....	173.87	60.55		234.42
Gas engine.....	11.64	4.49		16.13
Miscellaneous.....	10.81	2.12		12.93
Total.....	335.83	247.94	6.28	590.05

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Bryan School, No. 155:				
Carpentering.....	\$28.44	\$4.06	.....	\$32.50
Tinning.....	50.93	19.89	.....	70.82
Heating.....	15.69	80.03	.....	95.72
Plumbing.....	16.50	3.98	.....	20.48
Painting and glazing.....	13.87	4.39	.....	18.26
Gas engine.....	17.48	9.29	.....	26.77
Miscellaneous.....	.....	1.74	.....	1.74
Total.....	142.91	123.38	.....	266.29
Buchanan School, No. 96:				
Carpentering.....	20.50	7.49	.....	27.99
Tinning.....	42.37	31.62	.....	73.99
Heating.....	.....	.....	\$77.65	77.65
Plumbing.....	12.68	1.96	.....	14.64
Painting and glazing.....	200.57	31.34	.....	231.91
Miscellaneous.....	5.75	1.00	.....	6.75
Total.....	281.87	73.41	77.65	432.93
Bunker Hill Road School, No. 161:				
Carpentering.....	13.28	1.85	.....	15.13
Tinning.....	11.34	10.89	.....	22.23
Plumbing.....	38.87	.....	.....	38.87
Painting and glazing.....	49.38	10.97	.....	60.35
Total.....	112.87	23.71	.....	136.58
Burrville School, No. 91:				
Carpentering.....	29.81	2.55	.....	32.36
Tinning.....	5.50	1.53	.....	7.03
Plumbing.....	4.88	.....	.....	4.88
Painting and glazing.....	6.38	1.17	.....	7.55
Steam fitting.....	46.39	17.08	.....	63.47
Miscellaneous.....	3.01	.10	.....	3.11
Total.....	95.97	22.43	.....	118.40
Business High School, No. 144:				
Carpentering.....	121.62	56.31	.....	177.93
Tinning.....	182.37	197.99	.....	380.36
Plumbing.....	60.68	7.79	.....	68.47
Heating.....	.....	.85	.....	.85
Painting and glazing.....	245.07	68.20	.....	313.27
Steam fitting.....	264.49	227.30	.....	491.79
Total.....	874.23	558.44	.....	1,432.67
Carbery School, No. 58:				
Carpentering.....	60.75	179.85	.....	240.60
Tinning.....	17.38	9.61	.....	26.99
Heating.....	1.43	104.89	131.75	238.07
Plumbing.....	12.01	5.88	.....	17.89
Painting and glazing.....	23.07	17.20	.....	40.27
Miscellaneous.....	6.87	3.76	.....	10.63
Total.....	121.51	321.19	131.75	574.45
Cardoza School, No. 148:				
Carpentering.....	13.00	1.22	.....	14.22
Tinning.....	.72	.....	.....	.72
Heating.....	3.44	3.91	.....	7.35
Plumbing.....	7.44	.16	.....	7.60
Painting and glazing.....	25.08	24.20	.....	49.28
Gas engine.....	16.64	2.79	.....	19.43
Miscellaneous.....	.....	1.74	.....	1.74
Total.....	66.32	34.02	.....	100.34
Cardoza Manual Training School, No. 168:				
Carpentering.....	7.13	.....	.....	7.13
Painting and glazing.....	19.44	18.38	.....	37.82
Steam fitting.....	7.90	1.62	.....	9.52
Total.....	34.47	20.00	.....	54.47

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Central High School, No. 43:				
Carpentering.....	\$438.83	\$325.03	.....	\$763.86
Tinning.....	179.79	130.24	.....	310.03
Plumbing.....	42.44	3.57	.....	46.01
Painting and glazing.....	133.28	69.61	.....	202.89
Steam fitting.....	76.24	42.92	.....	119.16
Miscellaneous.....	.....	1.00	.....	1.00
Total.....	870.58	572.37	.....	1,442.95
Chain Bridge Road School, No. 6:				
Carpentering.....	18.62	7.18	.....	25.80
Tinning.....	5.50	.....	.....	5.50
Painting and glazing.....	1.50	.19	.....	1.69
Total.....	25.62	7.37	.....	32.99
Chevy Chase School, No. 113:				
Carpentering.....	7.94	2.36	.....	10.30
Tinning.....	12.59	4.36	.....	16.95
Heating.....	.....	.95	\$1.55	2.50
Painting and glazing.....	8.99	3.49	.....	12.48
Total.....	29.52	11.16	1.55	42.23
Conduit Road School, No. 25:				
Carpentering.....	10.00	10.26	.....	20.26
Painting and glazing.....	3.37	12.78	.....	16.15
Total.....	13.37	23.04	.....	36.41
Congress Heights School, No. 111:				
Carpentering.....	272.38	124.65	.....	397.03
Tinning.....	41.54	13.47	.....	55.01
Heating.....	.....	2.73	.....	2.73
Plumbing.....	20.18	.....	.....	20.18
Painting and glazing.....	410.95	95.70	.....	506.65
Total.....	745.05	236.55	.....	981.60
Cleveland School, No. 165:				
Carpentering.....	337.38	158.24	.....	495.62
Tinning.....	28.59	13.63	.....	42.22
Heating.....	.....	.....	260.40	260.40
Plumbing.....	39.12	40.38	.....	79.50
Painting and glazing.....	22.70	16.89	.....	39.59
Grading.....	1.13	.....	.....	1.13
Motor.....	3.38	.....	10.00	13.38
Total.....	432.30	229.14	270.40	931.84
J. F. Cook School, No. 30:				
Carpentering.....	88.03	8.59	.....	96.62
Tinning.....	16.60	10.29	.....	26.79
Heating.....	.....	8.68	29.45	38.13
Plumbing.....	22.39	4.36	.....	26.75
Painting and glazing.....	45.00	26.54	.....	71.54
Gas engine.....	7.77	3.83	.....	11.60
Miscellaneous.....	14.62	.91	.....	15.53
Total.....	194.31	63.20	29.45	286.96
H. D. Cooke School, No. 154:				
Carpentering.....	76.94	31.82	.....	108.76
Tinning.....	20.31	22.29	.....	42.60
Heating.....	7.50	34.18	.....	41.68
Plumbing.....	27.82	1.25	.....	29.07
Painting and glazing.....	14.07	5.37	.....	19.44
Gas engine.....	18.01	9.63	.....	27.64
Miscellaneous.....	.....	1.00	.....	1.00
Total.....	164.65	105.54	.....	270.19
Corcoran School, No. 68:				
Carpentering.....	43.41	174.66	.....	218.07
Tinning.....	25.91	19.67	.....	45.58
Heating.....	.....	.....	2.63	2.63
Plumbing.....	3.25	.39	.....	3.64
Painting.....	11.57	5.04	.....	16.61
Grading.....	197.06	.....	.....	197.06
Total.....	281.20	199.76	2.63	483.59

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Cranch School, No. 137:				
Carpentering.....	\$5.31	\$5.76		\$11.07
Tinning.....	41.37	76.11		117.48
Heating.....	5.75			5.75
Plumbing.....	12.75	6.37		19.12
Painting and glazing.....	13.13	2.37		15.50
Steamfitting.....	50.69	27.17		77.86
Miscellaneous.....		.74		.74
Total.....	129.00	118.52		247.52
Crummell School, No. 167:				
Tinning.....	8.62	9.35		17.97
Heating.....			\$7.98	7.98
Plumbing.....	18.46	3.17		21.63
Painting and glazing.....	107.00	22.79		129.79
Gas engines.....	30.27	14.60		44.87
Total.....	164.35	49.91	7.98	222.24
Curtis School, No. 26:				
Carpentering.....	9.00	.96		9.96
Tinning.....	189.86	310.09		499.95
Plumbing.....	10.69	.86		11.55
Painting and glazing.....	20.73	12.39		33.12
Steamfitting.....	63.72	83.65		147.37
Total.....	294.00	407.95		701.95
Dennison School, No. 52:				
Carpentering.....	243.39	100.32		343.71
Tinning.....	90.66	96.04		186.70
Plumbing.....	47.50	30.56		78.06
Painting and glazing.....	34.76	35.14		69.90
Steamfitting.....	19.97	54.90		74.87
Miscellaneous.....	35.00	5.84		40.84
Total.....	471.28	322.80		794.08
Deanwood School, No. 152:				
Carpentering.....	117.64	60.34		177.98
Tinning.....	41.94	24.72		66.66
Heating.....		1.63	10.62	12.25
Painting and glazing.....	9.81	5.35		15.16
Total.....	169.39	92.04	10.62	272.05
Dent School, No. 120:				
Carpentering.....	5.03	2.05		7.08
Heating.....	45.29	8.04		53.33
Plumbing.....	4.88	.16		5.04
Painting and glazing.....	291.56	71.26		362.82
Gas engine.....	23.39	8.07		31.46
Total.....	370.15	89.58		459.73
Douglass School, No. 99:				
Carpentering.....	42.22	254.32		296.54
Tinning.....	12.50	11.85		24.35
Heating.....	.69			.69
Plumbing.....	1.12			1.12
Painting and glazing.....	13.83	7.60		21.43
Miscellaneous.....	.93			.93
Total.....	71.34	273.77		345.11
Eastern High School, No. 85:				
Carpentering.....	631.78	357.74		989.52
Tinning.....	20.90	14.49		35.39
Heating.....	6.50	3.71		10.21
Plumbing.....	45.13	13.14		58.27
Painting and glazing.....	320.43	80.16		400.59
Steamfitting.....	183.48	180.00	272.00	635.48
Total.....	1,208.22	649.24	272.00	2,129.46

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Eaton School, No. 160:				
Carpentering.....	\$68.73	\$13.74	.....	\$82.47
Tinning.....	5.03	1.71	.....	6.74
Plumbing.....	9.74	1.03	.....	10.77
Heating.....	.....	.....	\$69.36	69.36
Painting and glazing.....	13.31	2.45	.....	15.76
Gas engine and motor.....	8.00	.31	.....	8.31
Miscellaneous.....	3.45	15.75	.....	19.20
Total.....	108.26	34.99	69.36	212.61
Eckington School, No. 116:				
Carpentering.....	287.66	54.07	.....	341.73
Tinning.....	135.28	80.96	.....	216.24
Heating.....	37.85	48.73	128.65	213.23
Plumbing.....	4.06	.15	.....	4.21
Painting and glazing.....	16.50	10.31	.....	26.81
Gas engine.....	28.42	16.75	.....	45.17
Miscellaneous.....	.....	1.00	.....	1.00
Total.....	509.77	209.97	128.65	848.39
Edmonds School, No. 135:				
Carpentering.....	7.94	2.76	.....	10.70
Tinning.....	4.84	6.69	.....	11.53
Plumbing.....	16.30	1.45	.....	17.75
Painting and glazing.....	10.81	6.47	.....	17.28
Gas engine.....	25.01	31.29	.....	56.30
Total.....	64.90	48.66	.....	113.56
Emery School, No. 133:				
Carpentering.....	15.00	1.99	.....	16.99
Tinning.....	1.50	1.06	.....	2.56
Plumbing.....	1.75	.....	.....	1.75
Painting and glazing.....	20.87	14.47	.....	35.34
Steamfitting.....	29.27	19.82	259.25	308.34
Grading.....	33.33	.....	.....	63.38
Miscellaneous.....	59.68	6.35	.....	66.03
Total.....	161.45	43.69	259.25	464.39
Fairbrother School, No. 159:				
Carpentering.....	17.75	8.92	.....	26.67
Tinning.....	9.50	2.44	.....	11.94
Heating.....	.....	.95	.....	.95
Plumbing.....	7.06	2.11	.....	9.17
Painting and glazing.....	6.62	4.67	.....	11.19
Grading.....	7.12	.....	.....	7.12
Gas engine.....	10.51	3.76	.....	14.27
Total.....	58.56	22.75	.....	81.31
Fillmore School, No. 92:				
Carpentering.....	128.84	199.38	.....	328.22
Tinning.....	51.44	16.62	.....	68.06
Heating.....	.....	.....	1.01	1.01
Plumbing.....	20.13	.65	.....	20.78
Painting and glazing.....	8.80	4.43	.....	13.23
Total.....	209.21	221.08	1.01	431.30
Foras School, No. 32:				
Carpentering.....	276.96	439.11	.....	716.07
Tinning.....	93.90	220.93	.....	314.83
Plumbing.....	28.12	43.92	.....	72.04
Painting and glazing.....	31.32	15.90	.....	47.22
Steam fitting.....	65.13	24.98	.....	90.11
Miscellaneous.....	2.50	1.75	.....	4.25
Total.....	497.93	746.59	.....	1,244.52
Franklin School, No. 15:				
Carpentering.....	61.29	35.69	.....	96.98
Tinning.....	6.53	5.45	.....	11.98
Plumbing.....	68.18	104.04	.....	172.22
Painting and glazing.....	134.05	43.59	.....	177.64
Steam fitting.....	17.50	22.55	.....	40.05
Total.....	287.55	211.32	.....	498.87

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
B. B. French School, No. 141:				
Carpentering.....	\$9.93	\$24.98		\$34.91
Tinning.....	15.54	10.04		25.58
Heating.....			\$16.28	16.28
Plumbing.....	2.75	.18		2.93
Painting and glazing.....	.94	.56		1.50
Gas engine.....	9.76	2.61		12.37
Miscellaneous.....		1.00		1.00
Total.....	38.92	39.37	16.28	94.57
Gage School, No. 143:				
Carpentering.....	12.63	1.05		13.68
Tinning.....	53.88	53.85		107.73
Heating.....			300.16	300.16
Plumbing.....	2.06			2.06
Painting and glazing.....	12.63	5.39		18.02
Gas engine.....	10.87	1.90		12.77
Miscellaneous.....		1.74		1.74
Total.....	92.07	63.93	300.16	456.16
Gales School, No. 36:				
Carpentering.....	48.41	84.61		133.02
Tinning.....	11.38	9.00		20.38
Plumbing.....	12.94	1.64		14.58
Painting and glazing.....	24.96	10.72		35.68
Steam fitting.....	72.86	65.59		137.95
Miscellaneous.....	24.34	1.94		26.28
Total.....	194.39	173.50		367.89
Garnet School, No. 34:				
Carpentering.....	43.75	14.84		58.59
Tinning.....	434.81	339.53		774.34
Painting and glazing.....	27.48	16.35		43.83
Steam fitting.....	15.97	59.72	194.00	269.69
Total.....	522.01	430.44	194.00	1,146.45
Garfield School, No. 158:				
Carpentering.....	87.49	51.16		138.65
Tinning.....	31.40	16.00		47.40
Heating.....	283.33	84.08	562.00	929.41
Painting and glazing.....	40.19	13.70		53.89
Gas engine.....	5.63	.16		5.79
Miscellaneous.....	2.25	.22		2.47
Total.....	450.29	165.32	562.00	1,177.61
Garrison School, No. 76:				
Carpentering.....	25.94	22.16		48.10
Tinning.....	91.50	95.11		186.61
Heating.....			11.54	11.54
Plumbing.....	5.63	.34		5.97
Painting and glazing.....	24.38	15.16		39.54
Miscellaneous.....		.74		.74
Total.....	147.45	133.51	11.54	292.50
Giddings School, No. 63:				
Carpentering.....	27.88	18.70		46.58
Tinning.....	18.59	7.99		26.58
Heating.....		15.81	25.11	40.92
Plumbing.....	60.87	15.25		76.12
Painting and glazing.....	17.75	10.78		28.53
Total.....	125.09	68.53	25.11	218.73
Good Hope School, No. 73:				
Carpentering.....	2.00	2.25		4.25
Painting and glazing.....	1.07	1.27		2.34
Total.....	3.07	3.52		6.59

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Grant School, No. 41:				
Carpentering.....	\$329.08	\$47.07	.....	\$376.15
Tinning.....	45.96	150.61	.....	196.57
Plumbing.....	22.75	20.41	.....	43.16
Painting and glazing.....	26.82	11.19	.....	38.01
Steam fitting.....	41.66	50.39	\$194.00	286.05
Total.....	466.27	279.67	194.00	939.94
Greenleaf School, No. 105:				
Carpentering.....	228.73	171.59	.....	400.32
Tinning.....	9.72	6.95	.....	16.67
Heating.....	2.16	.....	30.54	32.70
Plumbing.....	41.88	20.07	.....	61.95
Painting and glazing.....	194.18	52.44	.....	246.62
Gas engine.....	51.65	41.59	.....	93.24
Miscellaneous.....	2.19	.....	.....	2.19
Total.....	530.51	292.64	30.54	853.69
Harrison School, No. 84:				
Carpentering.....	61.56	99.26	.....	160.82
Tinning.....	16.50	8.76	.....	25.26
Plumbing.....	13.00	.08	.....	13.08
Painting and glazing.....	44.36	18.52	.....	62.88
Total.....	135.42	126.62	.....	262.04
Hayes School, No. 107:				
Carpentering.....	10.75	6.23	.....	16.98
Tinning.....	8.25	3.33	.....	11.58
Heating.....	1.44	1.30	.....	2.74
Plumbing.....	19.86	1.85	.....	21.71
Painting and glazing.....	13.50	8.61	.....	22.11
Gas engine.....	5.97	3.69	.....	9.66
Miscellaneous.....	.....	1.00	.....	1.00
Total.....	59.77	26.01	.....	85.78
Henry School, No. 33:				
Carpentering.....	264.26	142.40	.....	406.66
Tinning.....	41.75	20.56	.....	62.31
Heating.....	.....	.....	93.00	93.00
Plumbing.....	14.48	2.78	.....	17.26
Painting and glazing.....	236.58	89.21	.....	325.79
Steam fitting.....	17.05	3.94	.....	20.99
Miscellaneous.....	.....	3.41	.....	3.41
Total.....	574.12	262.30	93.00	929.42
Hilton School, No. 115:				
Carpentering.....	163.10	37.47	.....	200.57
Tinning.....	2.87	1.33	.....	4.20
Heating.....	12.34	4.93	6.82	24.09
Plumbing.....	15.99	.95	.....	16.94
Painting and glazing.....	45.55	19.53	.....	65.08
Gas engine.....	18.65	9.99	.....	28.64
Miscellaneous.....	13.74	2.17	.....	15.91
Total.....	272.24	76.37	6.82	355.43
Hubbard School, No. 119:				
Carpentering.....	38.68	17.90	.....	56.58
Tinning.....	13.22	377.23	.....	390.45
Plumbing.....	.50	.....	.....	.50
Painting and glazing.....	26.56	17.21	.....	43.77
Gas engine.....	10.15	.47	.....	10.62
Miscellaneous.....	.....	1.00	.....	1.00
Total.....	89.11	413.81	.....	502.92
Hyde School, No. 147:				
Carpentering.....	13.50	5.20	.....	18.70
Tinning.....	57.84	178.93	.....	236.77
Heating.....	2.88	21.83	.....	24.71
Plumbing.....	7.88	1.19	.....	9.07
Painting and glazing.....	34.38	53.95	.....	88.33
Gas engine.....	34.55	21.65	.....	56.20
Total.....	151.03	282.75	.....	433.78

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Jackson School, No. 69:				
Carpentering	\$168.04	\$292.40		\$460.44
Tinning	10.03	9.78		19.81
Heating			\$174.38	174.38
Painting and glazing	192.74	39.63		232.37
Miscellaneous	1.87	.02		1.89
Total	372.68	341.83	174.38	888.89
Jefferson School, No. 23:				
Carpentering	916.32	647.69		1,564.01
Tinning	58.95	72.04		130.99
Heating	59.25	32.19		91.44
Plumbing	88.88	12.28		101.16
Painting and glazing	236.26	44.80		281.06
Steam fitting	176.94	53.33	94.60	324.87
Miscellaneous .....		.06		.06
Total	1,536.60	862.39	94.60	2,493.59
Johnson School, No. 95:				
Carpentering	28.69	16.15		44.84
Tinning	23.29	21.30		44.59
Heating		2.87	116.25	119.12
Plumbing	2.25	.67		2.92
Painting and glazing	17.87	5.75		23.62
Grading	6.00			6.00
Total	78.10	46.74	116.25	241.09
Johnson School annex:				
Carpentering	3.00	1.48		4.48
Tinning		2.58		2.58
Plumbing	3.25			3.25
Painting and glazing	9.44	3.89		13.33
Total	15.69	7.95		23.64
Jones School, No. 77:				
Carpentering	69.19	98.00		167.19
Tinning .....	.50			.50
Heating .....		.77	17.59	18.36
Plumbing	24.43	5.12		29.55
Painting and glazing	18.82	8.68		27.50
Miscellaneous		1.00		1.00
Total	112.94	113.57	17.59	244.10
Kenilworth School, No. 128:				
Carpentering	40.75	7.08		47.83
Tinning	50.53	129.22		179.75
Heating			31.00	31.00
Painting and glazing	13.13	2.76		15.89
Motor	1.50	.86		2.36
Total	105.91	139.92	31.00	276.83
Ketcham School, No. 149:				
Carpentering	56.66	92.38		149.04
Tinning	31.88	16.90		48.78
Heating .....		.78	57.43	58.21
Painting	8.00	3.53		11.53
Gas engine	8.47	5.79		14.26
Total	105.01	119.38	57.43	281.82
Langdon School, No. 108:				
Tinning	1.50			1.50
Heating	32.34	.24		32.58
Painting and glazing	9.32	5.85		15.17
Motor	2.24	.52		2.76
Miscellaneous		1.74		1.74
Total	45.40	8.35		53.75

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Langston School, No. 132:				
Carpentering.....	\$67.50	\$25.93		\$93.43
Tinning.....	12.25	4.24		16.49
Heating.....			\$515.23	515.23
Plumbing.....	7.75	1.04		8.79
Painting and glazing.....	26.74	18.10		44.84
Gas engine.....	25.94	11.00		36.94
Miscellaneous.....		1.74		1.74
Total.....	140.18	62.05	515.23	717.46
Lenox School, No. 67:				
Carpentering.....	47.72	27.99		75.71
Tinning.....	4.75			4.75
Heating.....		.31	26.74	27.05
Plumbing.....	2.63			2.63
Painting and glazing.....	337.11	55.46		392.57
Miscellaneous.....	15.25	2.89		18.14
Total.....	407.46	86.65	26.74	520.85
Lincoln School, No. 18:				
Carpentering.....	187.14	66.45		253.59
Tinning.....	55.93	187.36		243.29
Plumbing.....	23.25	4.62		27.87
Painting and glazing.....	107.51	24.25		131.76
Steam fitting.....	262.93	233.28		496.21
Grading.....	13.59			13.59
Miscellaneous.....		1.74		1.74
Total.....	650.35	517.70		1,168.05
Logan School, No. 90:				
Carpentering.....	44.03	6.51		50.54
Tinning.....	15.87	14.31		30.18
Heating.....		7.52	82.07	89.59
Plumbing.....	13.82	1.84		15.66
Painting and glazing.....	13.33	7.01		20.34
Miscellaneous.....		1.00		1.00
Total.....	87.05	38.19	82.07	207.31
Lovejoy School, No. 124:				
Carpentering.....	106.18	133.54		239.72
Tinning.....	26.03	13.58		39.61
Heating.....			22.40	22.40
Plumbing.....	21.00	.30		21.30
Painting and glazing.....	18.50	6.04		24.54
Grading.....	21.75			21.75
Gas engine.....	22.45	32.03		54.48
Total.....	215.91	185.49	22.40	423.80
Ludlow School, No. 142:				
Carpentering.....	1.50			1.50
Tinning.....	13.25	4.48		17.73
Heating.....			46.50	46.50
Plumbing.....	4.87	.22		5.09
Painting and glazing.....	11.51	4.33		15.84
Gas engine.....	16.15	9.08		25.23
Total.....	47.28	18.11	46.50	111.89
M Street High School, No. 82:				
Carpentering.....	76.41	24.42		100.83
Tinning.....	29.53	35.46		64.99
Plumbing.....	4.88	2.15		7.03
Painting and glazing.....	37.52	14.32		51.84
Steam fitting.....	7.84	1.73		9.57
Miscellaneous.....	2.63	2.31		4.94
Total.....	158.81	80.39		239.20
M Street heating plant:				
Painting and glazing.....	3.50	.75		4.25
Steam fitting.....	34.04	47.05		81.09
Total.....	37.54	47.80		85.34

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Madison School, No. 71:				
Carpentering.....	\$312.35	\$409.74	.....	\$722.09
Tinning.....	2.15	2.35	.....	4.50
Heating.....	8.19	.28	\$117.57	126.04
Plumbing.....	9.06	.19	.....	9.25
Painting and glazing.....	103.76	22.67	.....	126.43
Miscellaneous.....	.....	.74	.....	.74
Total.....	435.51	435.97	117.57	989.05
Magruder School, No. 62:				
Carpentering.....	35.91	86.97	.....	122.88
Tinning.....	2.15	3.23	.....	5.38
Heating.....	.....	.....	139.81	139.81
Plumbing.....	1.68	.....	.....	1.68
Painting and glazing.....	7.94	4.96	.....	12.90
Miscellaneous.....	4.50	1.00	.....	5.50
Total.....	52.18	96.16	139.81	288.15
Maury School, No. 55:				
Carpentering.....	197.41	342.45	.....	539.86
Tinning.....	28.94	26.46	.....	55.40
Heating.....	.....	.....	48.67	48.67
Plumbing.....	5.38	4.07	.....	9.45
Painting and glazing.....	26.95	13.82	.....	40.77
Grading.....	118.28	2.71	.....	120.99
Gas engine.....	12.76	13.99	.....	26.75
Miscellaneous.....	9.93	1.29	.....	11.22
Total.....	399.65	404.79	48.67	853.11
McCormick School, No. 16:				
Carpentering.....	6.50	6.34	.....	12.84
Plumbing.....	.50	.....	.....	.50
Painting and glazing.....	56.13	17.69	.....	73.82
Total.....	63.13	24.03	.....	87.16
McKinley Manual Training School, No. 130:				
Carpentering.....	259.45	103.09	.....	362.54
Tinning.....	122.21	45.27	.....	167.48
Plumbing.....	62.31	23.89	.....	86.17
Painting and glazing.....	193.07	82.81	.....	275.88
Steam fitting.....	50.87	45.17	.....	96.04
Miscellaneous.....	.....	57.93	.....	57.93
Total.....	687.91	358.13	.....	1,046.04
Military Road School, No. 8:				
Carpentering.....	28.94	15.14	.....	44.08
Tinning.....	14.75	15.68	.....	30.43
Plumbing.....	55.95	4.21	.....	60.16
Painting and glazing.....	3.19	1.04	.....	4.23
Total.....	102.83	36.07	.....	138.90
Monroe School, No. 72:				
Carpentering.....	59.87	16.55	.....	76.42
Tinning.....	11.88	141.96	.....	153.84
Heating.....	2.88	3.98	1.16	8.02
Plumbing.....	2.63	.17	.....	2.80
Painting and glazing.....	46.30	24.57	.....	70.87
Grading.....	16.00	.....	.....	16.00
Motor.....	6.19	.07	.....	6.26
Miscellaneous.....	.....	1.74	.....	1.74
Total.....	145.75	189.04	1.16	335.95
Montgomery School, No. 140:				
Carpentering.....	79.94	.39	.....	80.33
Tinning.....	80.97	46.49	.....	127.46
Heating.....	.....	.....	19.22	19.22
Plumbing.....	3.13	.82	.....	3.95
Painting and glazing.....	11.38	6.34	.....	17.72
Gas engine.....	10.47	4.13	.....	14.65
Miscellaneous.....	.....	1.74	.....	1.74
Total.....	185.89	59.96	19.22	265.07

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Morgan School, No. 125:				
Carpentering.....	\$13.51	\$0.81		\$14.32
Tinning.....	3.44	3.96		7.40
Heating.....	9.75	6.94	\$27.43	44.12
Plumbing.....	18.32	3.34		21.66
Painting and glazing.....	28.14	23.94		52.08
Grading.....	7.81			7.81
Gas engine.....	48.07	28.62		76.69
Miscellaneous.....		1.41		1.41
Total.....	129.04	69.02	27.43	225.49
Morse School, No. 44:				
Carpentering.....	20.49	88.45		108.94
Tinning.....	13.75	3.19		16.94
Heating.....			24.80	24.80
Plumbing.....	22.74	5.25		27.99
Painting and glazing.....	44.25	23.35		67.60
Gas engine.....	9.77	4.57		14.34
Total.....	111.00	124.81	24.80	260.61
New Mott School, No. 153:				
Carpentering.....	11.50	5.40		16.90
Tinning.....	16.69	5.96		22.65
Heating.....	7.50	37.41		44.91
Plumbing.....	20.31	6.47		26.78
Painting and glazing.....	10.75	5.85		16.60
Gas engine.....	16.90	4.17		21.07
Miscellaneous.....	2.19	.13		2.32
Total.....	85.84	65.39		151.23
Miner Normal School, No. 169.				
Grading.....	274.50			274.50
Orr School, No. 122:				
Carpentering.....	1.00	.34		1.34
Tinning.....	1.43	.30		1.73
Heating.....		6.20	295.66	301.86
Plumbing.....	3.25	8.39		11.64
Painting and glazing.....	6.50	2.69		9.19
Total.....	12.18	17.92	295.66	325.76
O-Street Manual Training School, No. 172:				
Plumbing.....	33.63	3.74		37.37
Painting and glazing.....	3.75	2.99		6.74
Miscellaneous.....		.37		.37
Total.....	37.38	7.10		44.48
Park View Portable School:				
Carpentering.....	17.41	2.20		19.61
Tinning.....	9.53	12.31		21.84
Heating.....	1.94			1.94
Plumbing.....	6.56	.56		7.12
Painting and glazing.....	11.00	5.87		16.87
Total.....	46.44	20.94		67.38
Patterson School, No. 93:				
Carpentering.....	18.25	7.80		26.05
Tinning.....	70.90	67.72		138.62
Heating.....			76.95	76.95
Plumbing.....	8.81	.82		9.63
Painting and glazing.....	21.82	14.17		35.99
Miscellaneous.....	3.12	2.19		5.31
Total.....	122.90	92.70	76.95	292.55
Payne School, No. 98:				
Carpentering.....	231.36	216.93		448.29
Tinning.....	14.38	3.77		18.15
Heating.....			33.94	33.94
Plumbing.....	17.25	5.48		22.73
Painting and glazing.....	14.06	16.94		31.00
Gas engine.....	20.39	4.39		24.78
Miscellaneous.....	.28	.13		.41
Total.....	297.72	247.64	33.94	579.30

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Peabody School, No. 31:				
Carpentering.....	\$772.12	\$238.93	.....	\$1,011.05
Tinning.....	11.94	7.36	.....	19.30
Plumbing.....	34.45	20.78	.....	55.23
Painting and glazing.....	61.00	35.88	.....	96.88
Steam fitting.....	79.72	18.25	\$190.40	288.37
Miscellaneous.....	5.66	1.00	.....	6.66
Total.....	964.89	322.20	190.40	1,477.49
Petworth School, No. 131:				
Carpentering.....	40.56	18.63	.....	59.19
Tinning.....	41.51	42.88	.....	84.39
Heating.....	.....	3.20	341.00	344.20
Plumbing.....	15.06	7.67	.....	22.73
Painting and glazing.....	40.81	24.58	.....	65.39
Grading.....	16.00	.....	.....	16.00
Gas engine.....	15.02	4.26	.....	19.28
Total.....	168.96	101.22	341.00	611.18
Phelps School, No. 57:				
Carpentering.....	29.32	9.36	.....	38.68
Heating.....	342.51	92.91	.....	435.42
Painting and glazing.....	33.19	23.10	.....	56.29
Miscellaneous.....	.....	1.74	.....	1.74
Total.....	405.02	127.11	.....	532.13
Phillips School, No. 81:				
Carpentering.....	70.65	136.20	.....	206.85
Tinning.....	16.50	4.45	.....	20.95
Heating.....	.....	.....	36.99	36.99
Plumbing.....	5.25	.66	.....	5.91
Painting and glazing.....	6.69	5.14	.....	11.83
Total.....	99.09	146.45	36.99	282.53
Pierce School, No. 94:				
Carpentering.....	17.06	3.00	.....	20.06
Tinning.....	.94	1.30	.....	2.24
Heating.....	307.15	76.05	.....	383.20
Plumbing.....	3.18	2.32	.....	5.50
Painting and glazing.....	8.13	3.91	.....	12.04
Miscellaneous.....	.....	1.74	.....	1.74
Total.....	336.46	88.32	.....	424.78
Polk School, No. 86:				
Carpentering.....	205.54	70.86	.....	276.40
Tinning.....	18.56	7.62	.....	26.18
Heating.....	16.75	26.32	60.13	103.20
Plumbing.....	.75	.....	.....	.75
Painting and glazing.....	305.89	91.00	.....	396.89
Total.....	547.49	195.80	60.13	803.42
Powell School, No. 157:				
Carpentering.....	151.50	87.56	.....	239.06
Tinning.....	3.00	.39	.....	3.39
Heating.....	10.13	455.44	20.85	486.42
Plumbing.....	15.13	1.45	.....	16.58
Painting and glazing.....	14.19	5.51	.....	19.70
Grading.....	6.50	.....	.....	6.50
Gas engine.....	1.50	35.00	45.00	81.50
Total.....	201.95	585.35	65.85	853.15
Randall School, No. 28:				
Carpentering.....	239.20	157.26	.....	396.46
Tinning.....	4.38	6.44	.....	10.82
Heating.....	3.81	4.47	2.87	11.15
Plumbing.....	87.75	50.15	.....	137.90
Painting and glazing.....	89.69	17.88	.....	107.57
Miscellaneous.....	.....	1.74	.....	1.74
Total.....	424.83	237.94	2.87	665.64

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Randle Highlands School, No. 166:				
Carpentering.....	\$3.19	\$0.73		\$3.92
Tinning.....	30.97	15.18		46.15
Heating.....			\$8.99	8.99
Plumbing.....	1.63	.01		1.64
Painting and glazing.....	2.00	.38		2.38
Grading.....	4.00			4.00
Gas engine and motor.....	42.07	9.07		51.14
Total.....	88.86	25.37	8.99	123.22
Reno School, No. 139:				
Carpentering.....	19.43	9.77		29.20
Heating.....		27.90	12.71	40.61
Painting and glazing.....	7.50	3.55		11.05
Total.....	26.93	41.22	12.71	80.86
Reservoir School, No. 110:				
Carpentering.....	25.50	9.50		35.00
Tinning.....	51.73	135.53		187.28
Heating.....	44.95	62.69		107.64
Plumbing.....	4.06	.05		4.11
Painting and glazing.....	22.62	39.51		62.13
Total.....	148.83	247.28		396.16
Ross School, No. 146:				
Carpentering.....	7.81	3.89		11.70
Tinning.....	186.14	111.67		297.81
Plumbing.....	6.51	.15		6.66
Painting and glazing.....	16.51	10.03		26.54
Total.....	216.97	125.74		342.71
Seaton School, No. 22:				
Carpentering.....	63.32	19.67		82.99
Tinning.....	274.75	170.92		445.67
Plumbing.....	16.08	2.12		18.20
Painting and glazing.....	154.13	41.54		195.67
Steam fitting.....	241.16	295.19		536.35
Miscellaneous.....		1.00		1.00
Total.....	749.44	530.44		1,279.88
Simmons School, No. 134:				
Carpentering.....	85.78	33.79		119.57
Plumbing.....	15.37	2.57		17.94
Painting and glazing.....	15.68	6.68		22.36
Steam fitting.....	71.31	9.03		80.34
Total.....	188.14	52.07		240.21
Slater School, No. 80:				
Carpentering.....	2.00	.39		2.39
Tinning.....	53.91	174.89		228.80
Heating.....		.54	4.03	4.57
Painting and glazing.....	21.63	13.44		35.07
Total.....	77.54	189.26	4.03	270.83
Fort Slocum School, No. 11:				
Carpentering.....	12.00	13.73		25.73
Heating.....	.25	.30		.55
Painting and glazing.....	6.50	2.67		9.17
Total.....	18.75	16.70		35.45
Smallwood School, No. 64:				
Carpentering.....	496.58	156.28		652.86
Tinning.....	13.16	8.58		21.74
Heating.....			82.45	82.45
Plumbing.....	7.25	.29		7.54
Painting and glazing.....	154.94	43.90		198.84
Miscellaneous.....	.44			.44
Total.....	672.37	209.05	82.45	963.87

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Stanton School, No. 138:				
Carpentering.....	\$106.06	\$43.52		\$149.58
Tinning.....	17.84	7.68		25.52
Heating.....			\$22.63	22.63
Plumbing.....	110.00	85.00		195.00
Painting and glazing.....	10.69	6.06		16.75
Miscellaneous.....	16.06	1.14		17.20
Total.....	260.65	143.40	22.63	426.68
H. Smothers School, No. 56:				
Carpentering.....	19.62	8.24		27.86
Tinning.....	15.50	2.99		18.49
Painting and glazing.....	5.00	.77		5.77
Miscellaneous.....		1.74		1.74
Total.....	40.12	13.74		53.86
Stevens School, No. 97:				
Carpentering.....	85.05	172.72		257.77
Tinning.....	47.61	94.81		142.42
Plumbing.....	16.81	2.28		19.09
Painting and glazing.....	681.14	120.12		801.26
Steam fitting.....	60.10	53.44		113.54
Miscellaneous.....	21.62	4.76		26.38
Total.....	912.33	448.13		1,360.46
Summer School, No. 19:				
Carpentering.....	9.00	2.31		11.31
Plumbing.....	32.74	2.20		34.94
Painting and glazing.....	13.82	8.68		22.50
Steam fitting.....	5.24	1.94		7.18
Miscellaneous.....		1.00		1.00
Total.....	60.80	16.13		76.93
Syphax School, No. 126:				
Carpentering.....	161.69	114.02		275.71
Tinning.....	37.15	14.83		51.98
Plumbing.....	16.31	.93		17.24
Painting and glazing.....	190.59	68.96		259.55
Steam fitting.....	43.69	10.54		54.23
Miscellaneous.....		1.74		1.74
Total.....	449.43	211.02		660.45
Takoma School, No. 118:				
Tinning.....	8.63	2.70		11.33
Heating.....	1.94	.28	2.09	4.31
Plumbing.....	4.07	.38		4.45
Painting and glazing.....	13.69	4.86		18.55
Gas engine.....	18.39	12.89		31.28
Total.....	46.72	21.11	2.09	69.92
Taylor School, No. 88:				
Carpentering.....	225.17	72.07		297.24
Tinning.....	11.84	2.85		14.69
Heating.....		1.82	11.78	13.60
Plumbing.....	16.31	12.28		28.59
Painting and glazing.....	94.53	29.10		123.63
Total.....	347.85	118.12	11.78	477.75
Tenley School, No. 102:				
Carpentering.....	244.40	59.67		304.07
Tinning.....	11.50	8.38		19.88
Plumbing.....	20.18	4.76		24.94
Painting and glazing.....	166.44	60.77		227.21
Steam fitting.....	28.26	5.69		33.95
Miscellaneous.....	11.94	2.66		14.60
Total.....	482.72	141.93		624.65

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Thomson School, No. 156:				
Carpentering.....	\$21.06	\$1.66	.....	\$22.72
Tinning.....	4.87	1.45	.....	6.32
Heating.....	.....	.....	\$109.20	109.20
Plumbing.....	24.31	.67	.....	24.98
Painting.....	14.76	6.27	.....	21.03
Motor.....	1.50	.....	.....	1.50
Total.....	66.50	10.05	109.20	185.75
Threlkeld School, No. 14:				
Carpentering.....	3.00	167.64	.....	170.64
Tinning.....	9.88	69.92	.....	79.80
Heating.....	2.31	4.80	.....	7.11
Plumbing.....	4.06	.....	.....	4.06
Painting and glazing.....	5.82	1.72	.....	7.54
Total.....	25.07	244.08	.....	269.15
Toner School, No. 114:				
Carpentering.....	2.69	.39	.....	3.08
Tinning.....	30.66	16.58	.....	47.14
Heating.....	.....	.....	11.47	11.47
Plumbing.....	.....	.16	.....	.16
Painting and glazing.....	6.07	2.37	.....	8.44
Gas engine.....	15.82	8.25	.....	24.07
Miscellaneous.....	.....	.20	.....	.20
Total.....	55.14	27.95	11.47	94.56
Towers School, No. 59:				
Carpentering.....	238.69	150.14	.....	388.83
Tinning.....	2.22	1.73	.....	3.95
Plumbing.....	4.25	2.81	.....	7.09
Painting and glazing.....	155.12	48.02	.....	203.14
Miscellaneous.....	41.72	6.85	.....	48.57
Total.....	442.00	209.58	.....	651.58
Twining School, No. 45:				
Carpentering.....	14.50	5.04	.....	19.54
Tinning.....	10.28	8.49	.....	18.77
Heating.....	.....	.....	3.64	3.64
Plumbing.....	2.38	1.27	.....	3.65
Painting and glazing.....	52.43	32.98	.....	85.41
Gas engine.....	23.19	.15	.....	23.34
Miscellaneous.....	.....	1.00	.....	1.00
Total.....	102.78	48.93	3.64	155.35
Tyler School, No. 83:				
Carpentering.....	9.06	2.44	.....	11.50
Tinning.....	14.36	4.55	.....	18.91
Plumbing.....	1.50	.61	.....	2.11
Painting and glazing.....	17.93	3.36	.....	21.29
Miscellaneous.....	.....	.74	.....	.74
Total.....	42.85	11.70	.....	54.55
Van Buren School, No. 87:				
Carpentering.....	100.98	129.22	.....	230.20
Tinning.....	217.84	266.29	.....	484.13
Heating.....	.....	.....	5.12	5.12
Plumbing.....	60.69	15.51	.....	76.20
Painting and glazing.....	18.74	8.03	.....	26.77
Miscellaneous.....	.....	1.00	.....	1.00
Total.....	398.25	420.05	5.12	823.42
Van Buren Annex, No. 38:				
Tinning.....	17.84	15.94	.....	33.73
Van Ness School, No. 150:				
Carpentering.....	3.50	3.91	.....	7.41
Tinning.....	13.19	10.74	.....	23.93
Heating.....	3.75	46.50	.....	50.25
Plumbing.....	2.44	.95	.....	3.39
Painting and glazing.....	14.31	8.32	.....	22.63
Gas engine.....	7.50	3.76	.....	11.26
Total.....	44.69	74.18	.....	118.87

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Wallach School, No. 4:				
Carpentering.....	\$279.42	\$293.00	.....	\$572.42
Tinning.....	79.11	282.86	.....	361.97
Plumbing.....	8.28	1.22	.....	9.50
Painting and glazing.....	212.01	35.87	.....	247.88
Steam fitting.....	89.39	71.23	\$222.80	383.42
Grading.....	3.00	.....	.....	3.00
Miscellaneous.....	18.53	7.46	.....	25.99
Total.....	689.74	691.64	222.80	1,604.18
Webb School, No. 121:				
Carpentering.....	124.82	45.02	.....	169.84
Tinning.....	6.47	1.78	.....	8.25
Heating.....	.....	.....	2.48	2.48
Plumbing.....	92.06	69.75	.....	161.81
Painting and glazing.....	37.53	12.03	.....	49.56
Gas engine.....	10.63	4.05	.....	14.68
Miscellaneous.....	.....	1.00	.....	1.00
Total.....	271.51	133.63	2.48	407.62
Webster School, No. 51:				
Carpentering.....	234.87	163.80	.....	398.67
Tinning.....	85.54	170.14	.....	255.68
Plumbing.....	16.37	5.70	.....	22.07
Painting and glazing.....	77.06	27.08	.....	104.14
Steam fitting.....	62.28	27.13	.....	89.41
Total.....	476.12	393.85	.....	869.97
Weightman School, No. 54:				
Carpentering.....	14.07	86.80	.....	100.87
Tinning.....	45.53	21.14	.....	66.67
Heating.....	14.50	.93	22.47	37.90
Plumbing.....	9.69	7.15	.....	16.84
Painting.....	9.81	4.15	.....	13.96
Grading.....	41.31	.....	.....	41.31
Miscellaneous.....	22.15	1.00	.....	23.15
Total.....	157.06	121.17	22.47	300.70
Western High School, No. 117:				
Carpentering.....	533.52	463.47	.....	996.99
Tinning.....	175.00	119.78	.....	294.78
Heating.....	7.75	3.00	.....	10.75
Plumbing.....	50.06	6.23	.....	56.29
Painting and glazing.....	115.74	36.93	.....	152.67
Steam fitting.....	81.39	13.79	.....	95.18
Miscellaneous.....	37.52	52.75	.....	90.27
Total.....	1,000.98	695.95	.....	1,596.93
West School, No. 163:				
Carpentering.....	12.50	.55	.....	13.05
Tinning.....	9.01	3.54	.....	12.55
Heating.....	.....	.....	7.52	7.52
Plumbing.....	7.25	.80	.....	8.05
Painting and glazing.....	6.88	3.68	.....	10.56
Gas engine.....	52.32	11.48	.....	63.80
Total.....	87.96	20.05	7.52	115.53
Wheatley School, No. 136:				
Carpentering.....	543.42	281.88	.....	825.30
Tinning.....	45.40	46.52	.....	91.92
Heating.....	.....	.34	3.41	3.75
Plumbing.....	17.44	1.94	.....	19.38
Painting and glazing.....	26.06	9.04	.....	35.10
Total.....	632.32	339.72	3.41	975.45
Wilson School, No. 89:				
Carpentering.....	90.64	33.16	.....	123.80
Tinning.....	7.50	6.07	.....	13.57
Heating.....	7.75	1.91	212.74	215.40
Plumbing.....	5.69	.....	.....	5.69
Painting and glazing.....	11.51	7.74	.....	19.25
Total.....	116.09	48.88	212.74	377.71

Repairs and improvements to school buildings and grounds and for repairing and renewing heating, plumbing, and ventilating apparatus, and the installation of sanitary drinking fountains in school buildings, 1914—Continued.

Class of work.	Labor.	Material.	Contract.	Total.
Wilson Normal School, No. 162:				
Carpentering.....	\$667.13	\$115.04	.....	\$782.17
Tinning.....	223.66	131.18	.....	354.84
Heating.....	30.75	13.37	.....	44.12
Plumbing.....	37.82	4.92	.....	42.74
Painting and glazing.....	85.81	46.13	.....	131.94
Steam fitting.....	112.51	302.39	.....	414.90
Grading.....	3.50	2.13	.....	6.63
Miscellaneous.....	45.12	4.26	.....	49.38
Total.....	1,206.30	619.47	.....	1,825.77
Wisconsin Avenue Manual Training School, No. 164:				
Heating.....	13.53	2.63	.....	16.16
Plumbing.....	2.43	.38	.....	2.81
Painting and glazing.....	2.00	.33	.....	2.33
Total.....	17.96	3.39	.....	21.35
Woodburn School, No. 101:				
Carpentering.....	12.00	4.55	.....	16.55
Tinning.....	89.75	74.77	.....	164.52
Heating.....	7.18	.26	.....	7.44
Plumbing.....	4.06	2.12	.....	6.18
Painting and glazing.....	15.31	7.63	.....	22.94
Total.....	128.30	89.33	.....	217.63
Wormley School, No. 49:				
Carpentering.....	8.50	1.47	.....	9.97
Tinning.....	85.82	76.57	.....	162.39
Heating.....	7.13	1.01	\$35.33	93.47
Plumbing.....	8.63	1.25	.....	9.88
Painting and glazing.....	6.26	1.94	.....	8.20
Gas engine.....	19.51	10.81	.....	30.32
Miscellaneous.....	.....	1.00	.....	1.00
Total.....	135.85	94.05	85.33	315.23
Various schools on written orders in shop:				
Carpentering.....	787.15	39.14	.....	826.29
Tinning.....	700.54	417.32	.....	1,117.86
Heating.....	654.06	89.78	.....	743.84
Plumbing.....	117.69	.50	.....	118.19
Painting and glazing.....	79.88	207.04	.....	286.92
Steamfitting.....	74.62	59.71	.....	134.33
Gas engines.....	35.25	7.00	.....	42.25
Miscellaneous.....	4,920.17	251.55	.....	5,171.72
Horseshoeing.....	103.12	102.67	.....	205.79
Total.....	7,472.48	1,174.71	.....	8,647.19

SUMMARY.

Total amount of labor accounted for on written orders.....	\$46,752.96
Total amount of material accounted for on written orders.....	27,799.77
Total amount of minor contracts and shop orders.....	6,955.54
Purchase of forage for July, August, and September.....	300.34
Pro rata share of purchase of harness.....	62.25
Horseshoeing done by outside shops.....	20.00
Gas consumed in machine shop.....	39.66
Purchase of coal.....	231.50
Allotment to sand wharf.....	25.17
Allotment to purchasing office (for inspector).....	70.00
Allotment to engineer stables (forage, etc., for 9 months).....	1,351.30
Contract for heating Congress Heights School.....	47.56
Contract for heating Jefferson School.....	5,391.45
Traveling expenses, municipal architect, New York and return.....	6,785.00
Traveling expenses, Capt. Powell, Newark, N. J., and return.....	19.00
Contract for ventilating Force School.....	32.34
Sewer tap at Blake School.....	3,481.00
Material on hand.....	2.00
Unexpended.....	835.82
Total.....	100,000.00

Report of inspection of steam boilers, public schools, 1913-14.

School.	Boilers.	High pressure.	Low pressure.	Length.	Diameter.	Tubes.	Size of tubes.	Manholes.	Size of manholes.	Tested.	Safety blows.	Date of inspection.	Remarks.
				<i>Ft.</i>	<i>In.</i>		<i>In.</i>		<i>Inches.</i>			1913.	
Armstrong Manual Training.	2	2	...	15 $\frac{1}{2}$	56	3 $\frac{1}{2}$	1	11 by 15	150	120	June 10	1913.	Shells and tubes in good condition.
Bowen, S. J.	1	1	...	14	54	64	3	1	11 by 15	100	50	June 4	Renewed feed lines.
Brightwood.	1	1	...	12	42	43	3	1	11 by 15	100	25	June 6	Boiler retubed.
Brookland.	2	1	...	12	42	52	3	1	11 by 15	100	25	May 21	Shells and tubes in good condition.
Do.	...	1	...	12	42	38	3	1	11 by 15	100	25	do.	Do.
Business High.	3	1	...	16	66	66	3	2	12 by 16	120	80	June 16	Renewed blowlines and water column.
Do.	...	2	...	16	66	66	3	2	12 by 16	120	80	do.	
Do.	...	3	...	16	66	66	3	2	12 by 16	120	80	do.	
Central High.	4	...	3	12	52	64	3	1	11 by 15	100	25	May 19	Put new set of grates at boiler No. 3.
Do.	11	...	2	10	42	38	3	1	11 by 15	100	25	do.	
Cranch.	2	...	2	10	42	38	3	1	11 by 15	75	25	May 31	Shells and tubes in good condition.
Curtis.	2	...	2	12	54	65	3	2	11 by 15	100	25	May 8	Put new tube in west boiler, extended blow-off lines to sewer, changed grates from hard to soft coal grates, and studded handhole plate.
Dennison.	2	...	2	10	42	49	3	2	11 by 15	100	20	May 10	Repaired boiler fronts and fire-box sides; changed grate bars from hard to soft coal bars.
Dent.	2	...	2	14	48	54	3	2	11 by 15	100	25	May 28	Good condition.
Eastern High.	2	...	2	14	48	54	3	2	11 by 15	100	25	May 28	Refined fire boxes and changed grate bars from hard to soft coal bars; retubed 2 boilers.
Emery.	2	...	2	14	54	54	3	1	11 by 15	100	25	May 21	Retubed boilers.
Force.	2	...	2	12	42	46	3	1	11 by 15	100	25	May 9	Put new set of grates in south boiler; rolled tubes; calked and chipped rivets and seams of north boiler.
Franklin.	2	...	2	12	48	48	3	1	11 by 15	60	30	do.	Shells and tubes in good condition.
Gales.	2	...	2	10	42	49	3	1	11 by 15	75	25	May 24	Repaired fire-box sides.
Garnet.	2	...	2	12	42	46	3	1	11 by 15	100	25	June 7	Retubed boilers and put new grate bars in both boilers.
Grant.	2	...	2	10	42	42	3	1	11 by 15	100	25	June 6	Retubed boilers and repaired fire-box sides; refined fire box and changed grate bars from hard to soft coal bars.
Henry.	2	...	2	12	46	42	3	1	11 by 15	100	25	May 19	Shells and tubes in good condition.
Jefferson.	2	2	...	12	42	46	3	1	11 by 15	80	30	June 4	Repaired fire-box sides.
Lincoln.	2	...	2	10	42	38	3	1	11 by 15	75	25	May 29	Changed grate bars from hard to soft coal bars and repaired fire-box sides.
M Street heating plant.	2	2	...	21	48	139	4	2	11 by 15	150	90	June 10	Shells and tubes in good condition.
McKinley Manual Training.	6	6	...	...	...	...	...	...	...	150	100	June 18	Put in new set of grates.
Do.	...	...	...	...	...	...	...	...	...	150	100	June 19	
Do.	...	...	...	...	...	...	...	...	...	150	100	June 20	
Do.	...	...	...	...	...	...	...	...	...	150	100	do.	
Do.	...	...	...	...	...	...	...	...	...	150	100	do.	
Peabody.	2	...	2	14	54	54	3	1	11 by 15	75	25	May 26	Retubed boilers.
Seaton.	2	...	2	10	42	40	3	2	11 by 15	75	25	May 23	Repaired fire-box sides and renewed all returns and blow-offs.
Stevens.	2	...	2	12	42	46	3	1	11 by 15	100	25	May 8	Shells and tubes in good condition.
Summer.	2	...	2	12	48	54	3	1	11 by 15	100	25	do.	Do.
Syphax.	1	1	...	14	54	52	3	1	11 by 15	100	50	June 3	Renewed blowline and repaired fire-box sides.
Tenley.	1	...	1	10	45	46	3	1	11 by 15	75	25	June 6	Put 1 tube in boiler.
Wallach.	2	...	2	12	46	52	3	1	11 by 15	70	25	May 28	Retubed boilers and renewed water columns and blow-off line.
Webster.	2	...	2	14	54	54	3	1	11 by 15	75	25	June 5	Put 1 tube in boiler.
Western High.	2	...	2	16	60	82	3	2	11 by 15	120	60	July 1	Calked seams of shell of west boiler.
Wilson Normal.	2	2	...	16	...	96	3	2	11 by 15	150	125	1914. Jan. 3	Shells and tubes in good condition.

125-horsepower upright.

2 down-draft sectional boilers.

Boiler No. 1.

Boiler No. 2.

Boiler No. 3.

Boiler No. 4.

Boilers Nos. 5 and 6.

REPORT OF THE PERMIT CLERK.

WASHINGTON, July 29, 1914.

SIR: I have the honor to submit the annual report of the work of this office, giving the character and number of permits issued during the fiscal year ending June 30, 1914.

Permits issued for which fees were paid.

	1913						1914						Total
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	
Water:													
Connections.....	159	141	147	104	107	103	58	80	75	130	172	155	1,431
Repairs.....	132	84	65	76	92	74	77	45	55	77	71	101	949
Sewer:													
Connections.....	166	136	184	101	119	109	68	77	89	147	152	180	1,528
Repairs.....	67	76	74	64	62	72	54	39	63	94	51	65	781
Gas:													
Connections.....	280	240	358	226	166	165	124	131	160	247	307	210	2,614
Repairs.....	11	11	15	41	85	75	38	62	24	23	10	20	415
Auto tire inflating apparatus.....				1					1	2			4
Carriage blocks and hitching posts.....			1	1	1								3
Conduits.....	25	27	31	59	18	20	34	28	21	29	32	22	346
Gas mains.....	12	10	12	6	9	9	6	2	10	7	10	13	106
Guard stones.....	1		1	3	1	1	1	1	2				11
Manholes, connect with sewer and enlarge.....	10	12	20	30	11	14	7	13	7	9	18	16	167
Parking fences.....	42	20	30	17	32	11	9	6	9	50	47	40	313
Poles.....	18	46	58	36	43	61	57	64	70	46	44	56	599
Wagon tags.....	64	70	59	92	64	62	55	40	56	44	20	29	655
Total.....	987	873	1,055	857	810	776	588	588	642	905	934	907	9,922

Special permits issued without fee.

	1913						1914						Total
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	
Water, sewer, gas....	55	56	78	75	60	77	72	38	73	147	122	136	989
Blasting.....	1	3	3	3	3	1		3	1	1	1	1	21
Bridges across gutters.....				2	1					1	1	4	9
Cables, aerial and overhead connections.....	18	32	45	42	29	31	16	14	35	24	50	46	382
Driveways.....	4	9	19	6	8	5	2	2	2	9	6	9	81
Engines, move.....	4	9	12	9	3	6	4	3	11	10	9	12	92
Leads, lay and repair.....	95	62	125	133	45	55	18	8	39	112	109	105	906
Parking:													
Pave.....	16	22	21	8	8	3	4	2	3	16	12	22	137
Railings, renew.....	7	8	8	16	4	4	4	7	7	17	15	7	104
Renovals.....	13	13	33	24	6	2	5	3	34	64	51	26	274
Roadways and alleys:													
Close.....	9	4	8	3		9			2			1	36
Grade and repair.....	5	5	1	14	5	8	8	2	4	11	11	14	88
Sidewalks:													
Grade.....		9		3	1	3	2	1	3	8	7	3	40
Cross.....	9	6	3	6	5	8	3	3	11	7	8	3	72
Lay and repair.....	35	20	31	27	25	19	6	3	11	13	10	32	232
Sidewalks and roadways, occupy.....		1	1	3	2	1	1			2		2	13
Steam and electric railways.....	1	1	1	2			10	1	6	2	2	3	29
Steps on parkings.....	52	32	53	66	28	30	8	7	17	37	82	70	482
Stop-cock boxes.....	12			12			12			12			48
United States Government.....	1			2	2	1	5	1	2		2	1	17
Walls, retaining.....	5	6	8	8	7	3	3			7	6	6	59
Water tables.....	23	22	40	35	16	20	8	4	8	41	36	49	302
Wires, string.....	56	20	35	58	16	16	61	19	51	59	48	92	531
Miscellaneous.....	6	1	8	9	10	2	1		9	6	7	4	63
Wagon tags.....	6		16	2			1	1		2		1	29
Total.....	433	341	549	568	284	304	254	122	329	608	595	649	5,036

Three thousand eight hundred and seventy-two communications were referred to this office, an increase of 1,852 over those of last year. Briefs were made of these on cards, permits issued when necessary, reports made, papers indorsed and returned to the respective division having supervision over the inspection of the work for which permits were issued.

A written report was made daily of all permits issued for excavation in the public space and was forwarded to the engineer of highways.

Fourteen thousand two hundred and seventy-four applications for permits were sorted, arranged according to location, and filed for ready reference.

Again I wish to invite your attention to the willing and efficient manner in which my two assistants, H. E. Brooks, assistant permit clerk, and G. A. Ourand, index clerk, have at all times performed their duties. As in former years I respectfully recommend the appointment of an assistant index clerk whose services are greatly needed, especially in answering the telephone calls which are increasing yearly.

Very respectfully,

H. M. WOODWARD,
Permit Clerk.

Capt. MARK BROOKE,
Assistant to Engineer Commissioner, District of Columbia.

REPORT OF THE AUTOMOBILE BOARD.

WASHINGTON, D. C., August 28, 1914.

SIR: I have the honor to submit the following report of the automobile board for the fiscal year ended June 30, 1914:

There were examined at the regular meetings of the board, held on the first and third Fridays in each month, and by the secretary and members at other times during the year, 3,072 persons for permits to operate motor vehicles in the District of Columbia, as required by the police regulations. Of those examined and recommended permits be issued them, 2,430 were to operate vehicles of the gasoline type, 198 of the electric type, 19 of the steam type, and 269 for motor cycles; also 124 to operate vehicles of the United States and District of Columbia Governments used for public business. Of those examined 32 were not satisfactory and were not recommended. Five permits were revoked on recommendation of the major and superintendent of the metropolitan police, and 1 permit was voluntarily surrendered.

Duplicate operator's permits were issued to 553 persons, affidavits being filed that the original permits had been lost or destroyed.

Revenue received for permits was \$8,959, residents of the District of Columbia paying \$5,942 and nonresidents paying \$3,017, the amounts paid being shown in tables herewith.

"Enamel metal identification number tags" were issued for 3,913 motor vehicles—138 for electric pleasure, 16 for electric trucks, 2,771 for gasoline pleasure, 262 for gasoline trucks and delivery wagons, 13 for steam, and 625 for motor cycles; also 71 automobiles and 17 motor cycles of the United States and District of Columbia Governments or used on official business. Duplicate tags were procured for 175 automobiles and 20 motor cycles to replace those lost or defaced.

The number of applicants examined to operate motor vehicles and the type of motor of the vehicle to be operated is shown in the table following; also the revenue derived therefrom paid to the collector of taxes, District of Columbia, by residents thereof.

Month.	Elec- tric.	Gas- oline.	Steam.	Motor cycles.	Not compe- tent.	Re- voked.	United States and Dis- trict of Colum- bia em- ployees, no fee.	Duplicate per- mits.	Paid for per- mits.
1913.									
July.....	16	184	.....	21	4	.....	8	19	\$524
August.....	9	196	.....	38	.....	.....	9	38	494
September.....	13	234	.....	21	5	.....	16	35	514
October.....	19	200	2	15	11	.....	39	39	468
November.....	24	160	2	24	.....	.....	2	33	404
December.....	23	156	.....	17	.....	.....	7	27	404

Month.	Electric.	Gasoline.	Steam.	Motor cycles.	Not competent.	Re-voked.	United States and District of Columbia employees, no fee.	Duplicate permits.	Paid for permits.
1914.									
January.....	19	106	-----	14	2	2	10	50	284
February.....	5	118	-----	14	3	-----	7	41	280
March.....	19	158	-----	17	1	-----	10	53	364
April.....	19	253	11	19	2	1	18	65	610
May.....	14	290	3	32	2	1	16	75	746
June.....	18	375	1	37	2	1	21	78	850
Total.....	198	2, 430	19	269	32	5	124	553	5, 942

The number of "enamel metal identification number tags" issued to residents of the District of Columbia and the different kinds of motor vehicles to which the number of tags were assigned, also amount paid in fees, is shown in the table following:

Month.	Electric.		Gasoline.		Steam.	Motor cycles.	United States and District of Columbia, no fee.		Duplicate tags procured.		Paid for tags, District of Columbia residents.
	Pleasure.	Trucks.	Pleasure.	Trucks.			Automobiles.	Motor cycles.	Automobiles.	Motor cycles.	
1913.											
July.....	11	.....	236	11	1	57	3	3	.....	.....	\$632
August.....	2	.....	201	8	.....	53	5	2	14	1	528
September.....	10	5	189	22	2	39	6	4	6	.....	534
October.....	18	2	206	20	1	34	8	1	13	5	562
November.....	14	8	154	25	3	32	2	.....	17	2	472
December.....	19	.....	152	20	.....	31	8	.....	14	1	444
1914.											
January.....	20	.....	158	17	.....	57	6	.....	11	1	504
February.....	8	1	117	17	.....	33	7	.....	20	1	352
March.....	11	.....	239	14	2	64	2	1	28	.....	660
April.....	10	.....	366	28	1	78	13	3	8	3	966
May.....	11	.....	403	41	2	79	5	1	19	2	1,072
June.....	4	.....	350	39	1	68	6	2	25	4	924
Total.....	138	16	2,771	262	13	625	71	17	175	20	7,650

The proviso at the end of section 2 of Article XXVI of the Police Regulations of the District of Columbia, which reads as follows:

"*Provided*, That where by the law of a State or Territory a resident of the District of Columbia may not lawfully operate or may not cause to be operated a motor vehicle in said State or Territory, except upon compliance with some condition or requirement as to license or tax or permit or registration for person or motor vehicle, a resident of said State or Territory shall not be allowed to operate nor cause to be operated a motor vehicle in the District except upon compliance within the District of Columbia with the same condition or requirement and with each of them; *And provided further*, That the law of the District of Columbia and its regulations shall in all other respects apply in all such cases and to all such persons."

was rescinded by order dated July 21, 1913; since which time nonresidents other than tourists using their motor vehicles during a transient sojourn have been required to register their motor vehicles and procure operator's permits at the same fee as is charged residents of the District of Columbia.

There was received from nonresidents during the fiscal year the sum of \$6,554.50, viz, \$3,017 for operator's permits and \$3,537.50 for "identification number tags," the States where the motor vehicles were owned being shown in detail in the following tables:

Amounts paid by nonresidents for permits to operate motor vehicles in the District of Columbia and State of their residence.

State.	1913					
	July.	August.	Septem-ber.	October.	Novem-ber.	Decem-ber.
Maryland.....	\$119.00	\$296.00	\$250.00	\$240.00	\$180.00	\$64.00
Virginia.....	20.00	20.00	30.00	22.00	8.00	12.00
Alabama.....						2.00
California.....		2.00		4.00		
Canada.....					2.00	
Colorado.....	2.00					
Connecticut.....				2.00		2.00
Cuba.....	2.00					
Iowa.....						2.00
Kansas.....					2.00	
Kentucky.....					2.00	
Maine.....					2.00	
Massachusetts.....				2.00	6.00	
Michigan.....						2.00
Minnesota.....	2.00					
New Hampshire.....					2.00	
New Jersey.....	2.00		2.00	2.00	2.00	2.00
New York.....		2.00	2.00	2.00	6.00	2.00
North Carolina.....					2.00	
Pennsylvania.....	2.00	2.00	2.00	4.00	2.00	
Utah.....		2.00			2.00	
Wisconsin.....				2.00		

State.	1914						Total.
	January.	Febru-ary.	March.	April.	May.	June.	
Maryland.....	\$126.00	\$70.00	\$130.00	\$256.00	\$366.00	\$354.00	\$2,451.00
Virginia.....	34.00	20.00	46.00	48.00	50.00	58.00	368.00
Alabama.....							2.00
California.....	2.00			2.00	2.00		12.00
Canada.....							2.00
Colorado.....	2.00			2.00			6.00
Connecticut.....	2.00						6.00
Cuba.....							2.00
England.....				2.00		2.00	4.00
Illinois.....				2.00			2.00
Indiana.....	2.00	2.00					4.00
Iowa.....				2.00	2.00		6.00
Kansas.....	2.00						4.00
Kentucky.....			2.00				4.00
Louisiana.....						2.00	2.00
Maine.....	2.00						4.00
Massachusetts.....	2.00	4.00		10.00			24.00
Michigan.....	4.00						6.00
Minnesota.....		2.00					4.00
Mississippi.....						2.00	2.00
Missouri.....					2.00		2.00
Nebraska.....		2.00					2.00
New Hampshire.....							2.00
New Jersey.....	2.00			2.00			14.00
New York.....		6.00		4.00	2.00		26.00
North Carolina.....							2.00
Ohio.....	6.00	2.00					8.00
Pennsylvania.....	4.00	6.00	2.00	2.00	4.00		30.00
Rhode Island.....	2.00						2.00
Switzerland.....	2.00						2.00
Texas.....			2.00	2.00			4.00
Utah.....							4.00
West Virginia.....		2.00					2.00
Wisconsin.....							2.00

Amount paid by nonresidents for "identification number tags" for motor vehicles in the District of Columbia and State of their residence.

State.	1913					
	July.	August.	Septem-ber.	October.	Novem-ber.	Decem-ber.
Maryland.....	\$165.50 82.00	\$326.00	\$258.00	\$274.00	\$174.00	\$84.00
Virginia.....	2.00 20.00	38.00	24.00	22.00	12.00	10.00
California.....		2.00		2.00		
Connecticut.....						2.00
Minnesota.....	2.00					
New Jersey.....	2.00				2.00	
New York.....		2.00	4.00	2.00	2.00	2.00
North Carolina.....					2.00	2.00
Pennsylvania.....	4.00	2.00	2.00	2.00		
Rhode Island.....						2.00
West Virginia.....				2.00		

State.	1914						Total.
	January.	Febru-ary.	March.	April.	May.	June.	
Maryland.....	\$150.00	\$104.00	\$176.00	\$350.00	\$432.00	\$416.00	\$2,991.50
Virginia.....	26.00	20.00	56.00	72.00	54.00	88.00	446.00
California.....					2.00		6.00
Connecticut.....	4.00						6.00
England.....						2.00	2.00
Georgia.....						2.00	2.00
Indiana.....				2.00			2.00
Iowa.....					2.00		2.00
Kentucky.....			2.00				2.00
Louisiana.....						2.00	2.00
Maine.....	2.00						2.00
Massachusetts.....		2.00					2.00
Minnesota.....		2.00					2.00
Mississippi.....							2.00
Missouri.....					2.00		2.00
New Jersey.....	2.00			2.00			8.00
New York.....				6.00			18.00
North Carolina.....		2.00					6.00
Ohio.....		2.00					2.00
Pennsylvania.....		4.00	4.00		2.00	4.00	24.00
Rhode Island.....							2.00
Texas.....			2.00				2.00
West Virginia.....				2.00			4.00

The amounts paid the collector of taxes, District of Columbia, for "enamel metal identification number tags" and for permits to operate motor vehicles is given in the table following; also shows the increase each fiscal year.

Year.	Permits.		Tags.		Nonresidents.	
	Number issued.	Fees paid.	Number issued.	Fees paid.	For permits.	For tags.
1907-8.....	1,050		2,214	\$2,666		
1908-9.....	1,818		1,684	3,568		
1909-10.....	2,262	\$1,292	2,387	4,752		
1910-11.....	2,262	4,460	2,634	5,314		
1911-12.....	2,593	6,022	4,070	7,848		
1912-13.....	2,737	6,246	4,035	7,872	\$572	\$1,939.58
1913-14.....	3,077	5,942	3,913	7,650	3,017	3,537.50

The act of Congress approved February 15, 1908, provides "that for identification number tag and registration thereof the owner of each motor vehicle shall pay the sum of two dollars, and the Secretary of the automobile board shall, after the payment of said fee to the collector of taxes, District of Columbia, issue said owner the identification tag."

By the changing of the identification number tags from vehicle to vehicle the records are becoming impaired to such an extent that often times tags which are void because of the motor vehicle having passed from ownership of the person to whom said tag was issued having been disposed of and to have an accurate record the recommendation for yearly registration and distinctive number tag for each calendar year is renewed and urgently recommended.

Very respectfully,

Capt. MARK BROOKE,
Assistant to Engineer Commissioner, District of Columbia.

H. M. WOODWARD,
Secretary Automobile Board.

REPORT OF THE ELECTRICAL ENGINEER.

WASHINGTON, September 14, 1914.

SIR: I have the honor to submit the following report of the operations of the electrical department during the fiscal year ended June 30, 1914:

IMPROVED INCANDESCENT ELECTRIC LIGHTING.

This system was ordered for the following streets and at the close of the fiscal year the installation of the posts and cables was under way:

I Street from Massachusetts Avenue to Fourteenth Street NW.	E Street from Seventh Street NW. to Union Station Plaza NE.
H Street from Massachusetts Avenue to Fourteenth Street NW.	U Street from Ninth to Eighteenth Streets NW.
New York Avenue from Ninth to Fourteenth Streets NW.	Eighteenth Street from U Street to Columbia Road NW.
Eighth Street from G to K Streets NW.	New Jersey Avenue from B to G Streets NW.
Ninth Street from G to K Streets NW.	Around Iowa Circle.
Tenth Street from G Street to New York Avenue NW.	North Capitol Street between Massachusetts Avenue and G Street.
Eleventh Street from G Street to New York Avenue NW.	G Street between North Capitol and First Streets NE.
Twelfth Street from G to I Streets NW.	First Street between Massachusetts Avenue and G Street NE.
Thirteenth Street from G to I Streets NW.	L Street between Fourteenth Street and Vermont Avenue NW.
Fourteenth Street from G Street to New York Avenue NW.	
G Street from Seventh Street to New Jersey Avenue NW.	
F Street from Seventh to North Capitol Streets NW.	

This work involved the erection of 600 lamps of 100 candlepower each, over about 8.85 miles of streets.

ARC LIGHTING.

The appropriation act for the fiscal year 1912 required that all inclosed arc lamps in service on July 1, 1911, be replaced either with 4-ampere magnetite arc lamps or with some other form of improved lighting to be selected by the commissioners, the changes to be made at the rate of not less than 400 lamps per annum, and to be completed by April 1, 1914. In compliance with this act, the following changes have been made:

For the year ended April 1, 1912:

Replaced by incandescent electric lamps.....	199
Changed to 4-ampere magnetite lamps.....	201
	<hr/> 400 <hr/>

For the year ended April 1, 1913:

Replaced by incandescent electric lamps.....	134
Changed to 4-ampere magnetite lamps.....	43
Ordered changed to 6.6 ampere (work completed Jan. 30, 1914).....	78
Ordered changed to 4-ampere magnetite (work not completed).....	168
	<hr/> 423 <hr/>

For the year ended April 1, 1914:

Changed to 4-ampere magnetite lamps.....	87
Replaced by incandescent electric lamps.....	96
Ordered replaced by incandescent electric lamps (work not completed)..	87
Ordered replaced by 4-ampere magnetite lamps (work not completed)....	210

380

PENNSYLVANIA AVENUE LIGHTING.

In the annual report of this department for the fiscal year 1909, a description was given of a suggested method of improving the lighting of Pennsylvania Avenue from First to Fifteenth Street, involving the erection of two rows of standards on "isles of safety" in the roadway close to the outer rails of the street-car tracks. This plan was formally referred to the commission on fine arts in 1911, whose report states:

"Members of the commission are personally familiar with a large number of the instances, both abroad and in this country, illustrated in the paper accompanying the report on the plan, and each of the members has independently reached the opinion that in every case of long straight avenues the appearance of the streets has suffered materially from the presence of the posts in the midst of the street. Therefore, in spite of the fact that such a method of lighting has been tried in many important thoroughfares, it is believed that lamps on tall posts, with isles of safety in connection, near the middle of the roadway, would confuse and seriously injure the appearance of Pennsylvania Avenue, the most important street vista in the Capital. Another consideration, which is both practical and aesthetic, is that the presence of these posts and islands in the roadway would interfere with the best handling of parades."

The elimination of a roadway plan of lighting practically fixed the position of the posts at the curb in line with the trees. In 1912 experiments with both tungsten and luminous arc lamps were made with posts temporarily erected at the curb between First Street and John Marshall Place, resulting in the adoption of the latter type of lamp. 6.6-ampere luminous arc lamps are used for the purpose, equipped, however, with special parts to permit of their installation within an elongated spherical ribbed frame of cast aluminum holding segments of polycase alabaster glass. The posts were designed by James Rush Marshall and Albert L. Harris, of the firm of Hornblower & Marshall, and follow the lines of the posts, also designed by them, that are used in the improved incandescent electric lighting system.

LIGHTS ALONG STEAM RAILROADS.

The situation with respect to the several suits brought by the District of Columbia against steam railroad companies to compel repayment of sums expended by the District for maintaining lights along the respective rights of way of such companies is as follows:

Judgment in the sum of \$1,042.04 secured against the Washington Terminal Co. for the amount due up to and including September 1, 1909, has been paid, together with costs and with interest from the above date to February 28, 1913. The total paid was \$1,392.08. A retrial of this case on certain questions of fact is now pending in the Supreme Court of the District of Columbia.

The case of the District of Columbia against the Philadelphia, Baltimore & Washington Railway Co. is still before the Supreme Court of the United States. Should this case be decided against the District a new suit will be entered under the following provision of the appropriation act for the District for the fiscal year ending June 30, 1914:

"Hereafter all railroads other than street railroads shall pay to the District of Columbia for the lighting, under the direction and control of the Commissioners of the District of Columbia, of the public roads, streets, avenues, and alleys, for their full width, through which their tracks may be laid, for the length of the street occupied by the said tracks, whether the said tracks be laid above, below, or at grade, as well as for the lighting of the subways and bridges over or under which the tracks of said railroads pass; and in default of payment of such bills actions at law may be maintained by the District of Columbia against said railroads or their successors, transferees, or lessees, therefor: *Provided*, That nothing herein shall be held to repeal the act of May twenty-sixth, nineteen hundred and eight, relating to the Washington Terminal Company."

The Baltimore & Ohio Railroad Co. and the Georgetown Barge, Dock, Elevator & Railway Co. are continuing to pay for the maintenance of the lamps charged to them. The changes have been as follows:

Kind of light.	Added.	Discontinued.
Mantle gas.....	265	156
Electric arc:		
6.6-ampere series, inclosed.....		130
5-ampere multiple, inclosed.....		100
6.6-ampere magnetite.....	¹ 188	
4-ampere magnetite.....	² 132	37
Electric incandescent:		
100-candlepower.....	³ 348	2
60-candlepower.....	⁴ 15	1
40-candlepower.....	⁵ 183	39
4-glower Nernst.....	4	
Street-designation lamps:		
On fire-alarm posts—		
Gas.....	11	3
Electric incandescent.....	7	3
On patrol posts—		
Gas.....		2
Electric incandescent.....		2
On plain posts, gas.....		16
Total.....	1,153	491

Net increase during the year, 662 lamps.

¹ These lamps replaced seventy-eight 5-ampere multiple inclosed arc lamps, thirty-two 4-ampere magnetite arc lamps, 1 100-candlepower incandescent electric lamp, twenty 40-candlepower incandescent electric lamps, and four mantle gas lamps.

² One hundred and twenty-eight of these lamps replaced an equal number of 6.6-ampere series inclosed arc lamps.

³ These lamps replaced two 6.6-ampere series inclosed arc lamps, twenty-two 5-ampere multiple inclosed arc lamps, five 4-ampere magnetite arc lamps, one 60-candlepower incandescent electric lamp, three 40-candlepower incandescent electric lamps, and one hundred and twenty-eight mantle gas lamps.

⁴ These lamps replaced twelve 40-candlepower incandescent electric lamps and four mantle gas lamps.

⁵ Three of these lamps replaced an equal number of mantle gas lamps.

SUMMARY OF CHANGES.

Net increase in number of lamps.....	662
Discontinued.....	48
Replaced by other kinds.....	443
Total changes.....	1,153

Lamps of all kinds in service July 1, 1914, as compared with July 1, 1913.

Kind of light.	1913	1914
Mantle gas.....	10,078	10,187
Electric arc:		
6.6-ampere series inclosed.....	296	166
5-ampere multiple inclosed.....	378	278
6.6-ampere magnetite.....		188
4-ampere magnetite.....	384	479
Electric incandescent:		
100-candlepower.....	1,439	1,785
60-candlepower.....	206	206
40-candlepower.....	315	329
4-glower Nernst.....	3,018	3,162
Street designation lamps:		
Gas.....	60	64
Electric.....	434	424
	65	67
Total.....	16,673	17,335

Increase during the year, 662 lamps.

DISTRICT UNDERGROUND CONDUIT AND CABLE SYSTEM.

The following conduit connections were made to the underground system:

Fire-alarm posts (total, 12).

Southwest corner of First and Patterson Streets NE. ¹	Southwest corner of Twentieth Street and Park Road NW.
Southeast corner of Eighth Street and Florida Avenue NE. ¹	Southeast corner of Third and K Streets NE. ¹
Southeast corner of Fifteenth and B Streets NE. ¹	Northeast corner of Eighteenth and Kenyon Streets NW.
Southeast corner of Thirteenth Street and Spring Road NW. ¹	Southwest corner of Twenty-second and E Streets NW.
Southwest corner of North Capitol and Channing Streets NW.	Northeast corner of Twenty-sixth and D Streets NW.
Northwest corner of Ninth Street and New York Avenue NW.	Southwest corner of New Hampshire Avenue and G Street NW.

Patrol posts (total, 12).

Southeast corner of First and M Streets NE. ¹	Northeast corner of Twentieth and E Streets NW.
Southwest corner of Sixteenth and B Streets NE. ¹	Southeast corner of Twenty-second and E Streets NW.
Southeast corner of Eighth and G Streets SE.	East side of Twenty-second Street between E Street and New York Avenue NW.
Southeast corner of Third and L Streets NE.	Southeast corner of Twenty-sixth and D Streets NW.
D Street between Fifth Street and John Marshall Place NW. ¹	Southeast corner of Twenty-sixth and F Streets NW.
South side of H Street west of Madison Place NW.	
Northwest corner of Nineteenth and B Streets NW.	

Connections to buildings (total, 8).

Department of Justice building.	Quartermaster's Department stables,
No. 5 police station house.	Nineteenth and B Streets NW.
Washington Railway & Electric Co. building, Twenty-fourth and P Streets NW.	Briggs School, Twenty-second and E Streets NW.
Annex to Insular Bureau, Eighteenth and F Streets NW.	Toner School, Twenty-fourth and F Streets NW.
House of Detention.	

Connections between conduits (total, 4).

Twentieth Street and Park Road NW.	Eighteenth Street and New York Avenue NW.
Sixth and I Streets NE. ¹	
Eighteenth Street between D and E Streets NW.	

Conduit extensions (total, 12).

Fourteenth and U Streets NW.	Ninth and F Streets NW.
Eighth and I Streets NW.	Eighth and G Streets NW.
Twelfth Street and New York Avenue NW.	Ninth and H Streets NW.
Eighth and D Streets SE.	Sixth and G Streets NW.
Thirteenth and G Streets NW.	New Jersey Avenue and F Street NW.
Eleventh and G Streets NW.	Third and G Streets NW.

¹Built by Chesapeake & Potomac Telephone Co., under contract.

In making the above-mentioned connections and extensions, 6,837 feet of conduit (duct feet) and 12 manholes were built, the work being done by this department except where noted otherwise.

Connections to the underground system, July 1, 1914.

Fire-alarm posts.....	361
Police-patrol posts.....	268
Cable-terminal posts.....	7
Schoolhouses.....	64
Fire department houses.....	28
Police station houses.....	13
Miscellaneous District buildings.....	8
United States Government buildings.....	23
Private buildings.....	49
Cable poles.....	88
<hr/>	
Total.....	909

Amount of space occupied by cable installed and withdrawn during year and by that in service July 1, 1914.

Owner of space.	Space occupied by cable.			
	Laid without conduit during year.	Installed during year.	Withdrawn during year.	July 1, 1914.
	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
District of Columbia.....		6,652		143,357
Chesapeake & Potomac Telephone Co.....		25,983	659	509,324
Washington Ry. & Electric Co. ¹		5,653		22,174
United States Government.....				1,536
Western Union Telegraph Co.....				7,180
Washington Terminal Co.....				1,019
Submarine cable.....				150
Placed in parking.....	51			2,115
Miscellaneous.....		978		2,833
Total.....	51	39,266	659	689,683

¹ Under this name are included the conduits of all the companies controlled by this corporation.

Aerial cable in service June 30, 1914.

Size of cable.	Telephone.		Combination.						Total.		
	Cable.	Conductors No. 19, Brown & Sharpe.	Cable.	Conductors (Brown & Sharpe).				Cable.	Conductors (Brown & Sharpe).		
				No. 14.		No. 19.			No. 14.	No. 19.	
				Pairs.	Conduc-tors.	Pairs.	Conduc-tors.				
<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>No.</i>	<i>Feet.</i>	<i>No.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>			
25-pair.....	1,599	79,950	10,130	10	202,600	15	303,900	11,729	202,600	383,850	
20-pair.....			1,152	10	23,040	10	23,040	1,152	23,040	23,040	
15-pair.....			8,625	6	103,500	9	155,250	8,625	103,500	155,250	
12-pair.....			9,558	6	114,696	6	114,696	9,558	114,696	114,696	
10-pair.....			890	5	8,900	5	8,900	890	8,900	8,900	
8-pair.....			852	4	6,816	4	6,816	852	6,816	6,816	
Total	1,599	79,950	31,207	.....	459,552	.....	612,602	32,806	459,552	692,552

In service June 30, 1914, 6.21 miles of cable, containing 218.20 miles of conductor.

FIRE-ALARM SYSTEM.

Twelve new fire-alarm boxes were placed in service during the year, 11 public and 1 private, located as follows:

Public boxes.

- No. 754, Conduit Road and W Street NW.
- No. 775, Thirty-ninth Street and Reno Road NW.
- No. 776, Forty-fourth Street and Murdock Mill Road NW.
- No. 879, Thirteenth Street and Spring Road NW.
- No. 923, Morris Road and West Street SE.
- No. 1221, Ninth Street and New York Avenue NW.
- No. 1614, Eighth Street and Florida Avenue NE.
- No. 1622, North Capitol and Channing Streets NW.
- No. 1633, Seventeenth Street and Fort Drive NE.
- No. 1817, Eighteenth and Kenyon Streets NW.
- No. 1818, Twentieth Street and Park Road NW.

Private box.

No. 1636, Washington Warehouse Co., 19 M Street NE.

Two private boxes, Nos. 365 and 368, located at 1800 F Street NW. and 1712 G Street NW., were discontinued during the year.

During the year 12 fire-alarm boxes were changed from overhead to underground connection.

Fire-alarm boxes in service.

	July 1—	
	1913	1914
Connected by overhead wires:		
Public boxes.....	91	90
Private boxes.....	35	29
Connected by underground wires:		
Public boxes.....	347	359
Private boxes.....	79	84
Total.....	552	562

Each fire-alarm box was tested several times during the year, the contact points cleaned, and the mechanism thoroughly overhauled. This is done regularly once a month as far as possible. The total number of tests amounted to 6,011, being an average of 10.695 per box.

Alarms received and transmitted:

Regular box alarms.....	660
Alarms from telephone stations.....	6
Alarms from national automatic boxes.....	0
Local alarms.....	664
Second alarms.....	25
Third alarms.....	8
Fourth alarms.....	3
Fifth alarms.....	0
Sixth alarms.....	0
Total.....	1,366
False box alarms.....	52
False local alarms.....	19

Alarms received by the month.

Month.	Box.		Local.	
	Number.	False.	Number.	False.
1913.				
July.....	62	5	49	.....
August.....	38	3	31	1
September.....	43	2	26	.....
October.....	43	2	38	2
November.....	51	9	55	2
December.....	64	11	87	1
1914.				
January.....	85	7	75	4
February.....	63	5	69	4
March.....	74	4	70	1
April.....	50	1	67	2
May.....	54	2	54	1
June.....	39	1	43	1
Total.....	666	52	664	19

Number of times boxes tested, 6,011.

POLICE PATROL SYSTEM.

The following changes and 14 new installations were made in the patrol system:

First precinct.—New installation, connected underground: Box No. 55, Seventh Street and Massachusetts Avenue NW., placed on same post with box No. 34 in Sixth precinct.

Third precinct.—New installation, connected underground: Box No. 64, Madison Place and H Street NW. Changed from overhead to underground connection: Box No. 17, Twenty-second and E Streets NW.; box No. 21, Twenty-sixth and F Streets NW.; box No. 46, Twenty-sixth and D Streets NW.; box No. 51, Nineteenth and B Streets NW.; box No. 52, Twentieth and E Streets NW.; box No. 53, Twenty-second Street and New York Avenue NW.

Fourth precinct.—New installation, connected overhead: Box No. 125, Delaware Avenue and K Street SW.

Fifth precinct.—New installation, connected underground: Box No. 28, Eighth and G Streets SE. New installation, connected overhead: Box No. 19, Half and I Streets SE. Change of location: Box No. 42, moved from Eighth and E Streets SE. to northeast corner of Eighth and D Streets SE.

The telephone system was changed in this precinct from a two-circuit registering and bridging system to a straight telephone service, each box being connected direct to the precinct station by an independent circuit.

Sixth precinct.—New installation, connected underground: Box No. 18, John Marshall Place and D Street NW.

Ninth precinct.—Changed from overhead to underground connection: Box No. 26, Sixteenth and B Streets NE.; box No. 34, Third and I Streets NE.; box No. 43, First and M Streets NE.

Tenth precinct.—New installation, connected overhead: Box No. 56, Kalmia Street and Beach Drive NW.; box No. 135, Riggs Road and District Line NW.; box No. 136, Blair Road and Rittenhouse Street NW.

Eleventh precinct.—New installation, connected overhead: Box No. 62, Howard Road near Potomac River SE.; box No. 123, Anacostia and Ridge Roads SE. Change of location: Box No. 121, moved from F Street SE., near the tracks of the Philadelphia, Baltimore & Washington Railroad Co., to Anacostia Road and M Street SE.

Subprecinct, Tenleytown.—New installation, connected overhead: Box No. 25, Klinge Road and Beach Drive NW.; box No. 31, Massachusetts and Nebraska Avenues NW.; box No. 65, Thirty-ninth Street and Reno Road NW.

Three old booth boxes were replaced by Gamewell wall boxes, located at Sheriff Road and Forty-fourth Place NE., Georgia Avenue and Butternut Street NW., and F Street SE. near tracks of Philadelphia, Baltimore & Washington Railroad Co.

On July 1, 1914, the distribution of boxes among the precincts was as follows:

Precinct.	Wall boxes.		Booths.	Total.
	Under-ground.	Over-head.		
First.....	31	1	.....	32
Second.....	22	.....	.....	22
Third.....	45	.....	.....	45
Fourth.....	21	14	.....	35
Fifth.....	22	13	.....	35
Sixth.....	25	.....	.....	25
Seventh.....	21	4	.....	25
Eighth.....	24	.....	.....	24
Ninth.....	23	18	.....	41
Tenth.....	35	14	1	50
Eleventh.....	.....	31	2	33
Subprecinct, Tenleytown.....	9	13	3	25
Total.....	278	108	6	392

TELEPHONE SYSTEM.

The following 31 telephones were added to the two switchboards of the department during the year:

1 office of Commissioner Newman, room 507.	1 electrical department garage.
1 office of Commissioner Siddons, room 508.	1 office boundary sewer outlet chamber.
2 office of Assistant Engineer Commissioner Powell, room 308.	4 Juvenile Court building.
2 office of corporation counsel, rooms 419 and 425.	1 office of purchasing officer at property yards, Tenth Street Wharf.
4 office of Board of Children's Guardians, rooms 331, 333, 335, and 337, 1 main, 3 extension.	1 Summer School building.
2 office of public utilities commission, rooms 5 and 17.	1 Cook School.
1 office of superintendent of sewers, room 307.	2 Business High School, 1 main, 1 extension.
(All of the above in the District Building.)	3 public schools storerooms, 1600 Eckington Place NE.
	1 Western High School.
	1 Normal School No. 2, Georgia Avenue and Euclid Street.
	2 fire department repair shop, 1 main, 1 extension.

The following 6 telephones on these switchboards were discontinued during the year:

3 James Ormond Wilson School, 2 main, 1 extension.	1 fire department, superintendent of machinery.
1 old Mott School.	1 police desk fifth precinct.

FRANKLIN SCHOOL SWITCHBOARD.

The following 5 telephones were added to this switchboard during the year: Franklin School building, 4 main, 1 extension.

Number of telephones connected to the District system on July 1, 1914.

Offices in the District Building.....	154
Outside offices and institutions.....	78
Public schools.....	194
Fire department.....	50
Police department, private branch exchange.....	47
Franklin School, private branch exchange.....	25
Water department.....	40
Police patrol service.....	399
Total.....	987

There are 26 portable telephone sets in service, the property of the District of Columbia. These instruments are used by the fire department and the employees of the electrical department.

STORAGE-BATTERY SYSTEM.

The number of cells of storage battery in service July 1, 1914, was as follows:

On fire-alarm circuits.....	1, 862
On patrol circuits.....	226
On local circuits.....	86
Total.....	2, 174

POLES.

Under the authority of the act of Congress approved June 30, 1902, regulating the use of telephone wires in the District of Columbia, the Chesapeake & Potomac Telephone Co. have reported the following amount of work done during the fiscal year: Poles erected in streets within the prescribed area:

Line.....	2
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Poles erected in alleys within the prescribed area:

Line.....	44
Guy.....	2
Anchors.....	18
	— 64

Poles erected in streets outside the prescribed area:

Line.....	126
Guy.....	7
Anchors.....	18
	— 151

Poles erected in alleys outside the prescribed area:

Line.....	134
Guy.....	12
Anchors.....	41
	— 187

Total..... 404

Poles taken down in alleys within the prescribed area:

Line.....	41
Guy.....	8
Anchors.....	4
	— 53

Poles taken down in streets outside the prescribed area:

Line.....	178
Guy.....	19
	— 197

Poles taken down in alleys outside the prescribed area:

Line.....	86
Guy.....	12
Anchors.....	4
	— 102

Total..... 352

Total erected during the year..... 404

Total taken down during the year..... 352

Net increase..... 52

MISCELLANEOUS POLE WORK.

Poles erected, taken down, moved, etc.

	Erected.			Taken down.			Moved.		Re-placed.		Reset.		In-crease.		De-crease.	
	Line.	Guy.	Anchor.	Line.	Guy.	Anchor.	Line.	Guy.	Line.	Guy.	Line.	Guy.	Line.	Guy.	Line.	Guy.
Chesapeake & Potomac Tele- phone Co.....	306	21	77	305	39	8	26	3	81	6	74		1			18
Potomac Electric Power Co.....	551	33	151	160	7	2							391	26		
Western Union Telegraph Co.....	10	1	1	26	2										16	1
Postal Telegraph-Cable Co.....	8	1		8										1		
District of Columbia.....	83			29									54			
Washington & Great Falls R. R. Co.....		1													1	
Columbia Ry. Co.....		4	4												4	
Steam railroads.....		4		28	4										28	
Total.....	958	65	233	556	52	10	26	3	81	6	74		446	32	44	19

List of poles of all kinds July 1, 1914.

	Line.	Guy.	Total.
District of Columbia.....	558	15	573
United States Government.....	297	1	298
Chesapeake & Potomac Telephone Co.....	5,818	635	6,453
Potomac Electric Power Co.....	5,285	139	5,424
Western Union Telegraph Co.....	1,053	.....	1,053
Postal Telegraph-Cable Co.....	356	9	365
Brightwood Ry. Co.....	340	.....	340
Columbia Ry. Co.....	461	4	465
Anacostia & Potomac Ry. Co.....	3	.....	3
City & Suburban Ry. Co.....	86	.....	86
Georgetown & Tenleytown Ry. Co.....	304	.....	304
Capital Ry. Co.....	208	.....	208
Washington & Baltimore Transit Co.....	30	.....	30
Maryland & Washington Ry. Co.....	158	.....	158
Capital Traction Co.....	202	.....	202
Washington & Glen Echo Ry. Co.....	8	.....	8
Steam railroads.....	545	.....	545
Washington & Great Falls R. R. Co.....	401	1	402
Total.....	16,113	804	16,917

ELECTRIC-WIRING INSPECTION.

The following tables show the amount of work performed by this department in connection with the electric-wiring inspection:

Permits issued by the inspector of buildings authorizing electrical wiring:

Buildings.....	1,172
Machinery.....	157
Signs.....	35
	<u>1,364</u>

Permits issued by the electrical department:

For inside electrical work.....	1,535
For outside electrical work.....	71
Temporary permits.....	261
Without fee (includes permits issued by inspector of buildings).....	1,268
Quarterly.....	77
Gas lamps outside.....	274
No fee.....	1
	<u>3,487</u>

Certificates issued:

Final.....	2,825
Without fee.....	99
Preliminary.....	4
	<u>2,928</u>

Fees paid to the collector of taxes:

For permits.....	\$2,218.00
For certificates.....	2,844.00
Miscellaneous.....	4.00
For 159 copies of Rules and Regulations, at 25 cents each.....	39.75
	<u>5,105.75</u>

Lamps and apparatus installed:

Incandescent.....	77,228
Arc lamps.....	93
Miscellaneous.....	9,339
Blank outlets.....	578
Motors.....	552
Total horsepower of motors.....	2,022
Generators.....	4
Total kilowatt capacity of generators.....	425

Defective wiring installations repaired, reported by inspectors.....	257
Notices of defective wiring sent.....	1, 162
Request for inspection.....	24
Miscellaneous.....	73
Inspections in connection with yearly license.....	219

Work of inspectors of electric wiring from July 1, 1913, to June 30, 1914.

Inspections in private buildings.....	10, 277
Inspections in Municipal buildings.....	166
Inspections in United States Government buildings.....	15
Inspections in theaters.....	480

Total inspections..... 10, 938

MISCELLANEOUS WORK.

This department prepared plans and specifications for and supervised the introduction of electrical installations in the following municipal properties:

Completed work.

Police stations:

- No. 1, repairs to cell-room lighting.
- No. 3, additional lighting.
- No. 4, wiring for garage.
- No. 6, wiring for garage.
- No. 7, wiring for garage.
- No. 8, wiring for garage.
- No. 10, repairs to lighting system.

Engine houses:

- No. 1, lighting system.
- No. 8 (shop), alterations in power system.
- No. 16, additional wiring.
- No. 20, battery charging set; installation of trip circuit; fixtures.
- No. 21 (No. 9 Truck), repairs and additional lighting.
- No. 23, installation of switch.

Truck houses:

- No. 2, lighting system.
- No. 4, lighting system.
- No. 5, repairs to lighting system (2 jobs).
- No. 7, repairs to fixtures; additional lighting.

No. 5 Chemical Engine House, installation of trip circuit.

Fire department machine shop, light and power system.

Juvenile Court, wiring for desk fans.

Jail, boiler room, additional lighting.

Business High School, additional lighting.

Franklin School:

- Lighting, rooms S3, N3, and 4.
- Extension of lighting system.

J. O. Wilson Normal School:

- Lighting fixtures.
- Alterations and additions, lighting.

Armstrong Manual Training School:

- Alterations and repairs to motors.
- Wattmeter installation.

Completed work—Continued.

Normal School No. 2:

- Lighting fixtures.
- Light and power system.

Eastern High School:

- Target lights.
- Additional lighting.

Western High School:

- Stereopticon outlets.
- Additional wiring.

Public school storehouse, power service fuses.

Crematorium, installation of motors.

Home for Aged and Infirm, lighting system.

Sewer department, Takoma substation, lighting.

Street cleaning stables SE., lighting in wagon shed.

Property yard, light and power system.

Work done by electrical department.

No. 23 Engine House, lighting trouble.

No. 1 Chemical Engine House, lighting trouble.

Normal School No. 2, additional stage wiring.

Eastern High School, lighting trouble.

Street cleaning stables NW., lighting trouble.

Eastern Market, lighting trouble.

Electrical department:

Automobile No. 2, lighting system.

Automobile No. 4, lighting system.

Jail, lighting trouble.

Work in progress.

Wisconsin Avenue Manual Training School, wiring for power and additional light.

Washington Asylum Hospital, lighting system.

Tuberculosis Hospital, outside lighting.

Plans prepared, work not started.

Engine houses:
 No. 7, lighting system.
 No. 11, lighting system.
 No. 18, repairs and extensions.
 No. 3 Truck House, lighting system.
 Police court, additional lighting.
 Police stations:
 No. 1, lighting changes and additions.
 No. 2, lighting system.
 Business High School, additional lighting.
 Franklin School, lighting third floor corridors.
 Curtis School, lighting system.

Plans prepared, work not started—Contd.

Normal School No. 2, clock and bell system.
 J. R. West School, lighting alterations.
 Playground storeroom, additional lighting.
 Convenience station No. 2, power equipment repairs.
 Water department:
 Garage and shops, light and power system.
 Repair shops, light and power system.
 Smallpox hospital (3 buildings), lighting system.

During the year 30 electric meters were tested for the public utilities commission.

STATEMENT OF RECEIPTS AND EXPENDITURES.

LIGHTING.

Receipts.

Appropriation.....	\$391,000.00
Repayments by Baltimore & Ohio R. R. Co.....	344.77
Repayments by Washington Terminal Co.....	3,810.90
Repayments by Georgetown Barge, Dock, Elevator & R. R. Co.....	520.28
Repayments by Philadelphia, Baltimore & Washington R. R. Co.....	6,034.41
Total.....	<u>401,710.36</u>

Expenditures.

Mantle gas lighting:		
Washington Gas Light Co.....	\$165,227.00	
Deduction for defective service.....	34.70	
		165,192.30
Georgetown Gas Light Co.....	10,300.40	
Deduction for defective service.....	25.95	
		10,274.45
Incandescent electric lighting:		
Potomac Electric Power Co.....	102,650.18	
Deduction for defective service.....	525.54	
		102,124.64
Arc lighting:		
Potomac Electric Power Co.....	83,063.40	
Deduction for defective service.....	435.66	
		82,632.74
Street designation lighting:		
Washington Gas Light Co.....	4,055.30	
Deduction for defective service.....	.50	
		4,054.80
Georgetown Gas Light Co.....	249.99	
Deduction for defective service.....	.14	
		249.85
Potomac Electric Power Co.....	643.58	
Deduction for defective service.....	1.50	
		642.08
Lamp-posts, lanterns, globes, etc.....		15,567.37
Paints, oils, etc.....		83.97
Travel expense.....		281.13
Labor pay roll.....		4,636.71
Street signs, material, etc.....		1,589.62
Erecting, moving, and taking down posts.....		1,016.06
Tools and hardware.....		282.54
Repairs to pavements.....		149.84
Cartage.....		39.80

222 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Stable expense.....	\$156.11
Rent of storerooms.....	1,440.00
Freight and express.....	47.20
Testing instruments.....	31.50
Tree trimming.....	166.21
Electric current and gas.....	34.76
Care and maintenance of horses and vehicles, engineer stables.....	730.27
Car tickets.....	34.75
Miscellaneous.....	6.65
Total.....	391,465.30

GENERAL SUPPLIES.

Receipts.

Appropriation.....	\$13,500.00
Repayments.....	135.45
	13,635.45

Expenditures.

Office expenses.....	907.86
Telephone rental, etc.....	4,396.12
Purchase of three automobiles.....	2,018.55
Purchase of three motor cycles.....	645.00
Purchase and exchange of three bicycles.....	112.50
Maintenance of four automobiles.....	1,280.04
Maintenance of three motor cycles.....	284.96
Maintenance of six bicycles.....	35.00
Miscellaneous garage expenses.....	421.67
Stable expenses.....	358.34
Storeroom expenses.....	49.70
Wire.....	778.57
Batteries and battery supplies.....	644.75
Instruments and apparatus.....	434.91
Line supplies.....	171.30
Tools and hardware.....	44.93
Conduit supplies.....	53.12
Poles and cross-arms.....	380.00
Paints.....	1.75
Tool wagon.....	70.00
Gas and electric current.....	22.53
Labor pay roll.....	277.75
Car tickets.....	90.25
Miscellaneous.....	13.46
	13,493.06

PURCHASE AND ERECTION OF FIRE-ALARM BOXES.

Receipts.

Appropriation.....	\$2,000.00
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Expenditures.

Fire-alarm boxes.....	1,250.00
Lamp-posts, etc.....	146.25
Labor pay roll.....	128.25
Conduit construction.....	57.00
Wire.....	148.54
Poles.....	22.00
Cable.....	119.00
Repairs to pavements.....	17.73
Hardware.....	38.75

Total.....	1,927.52
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EXTENSION OF POLICE-PATROL SYSTEM.

Receipts.

Appropriation.....	\$3,000.00
Repayments.....	3.77
Total.....	<u>3,003.77</u>

Expenditures.

Cable.....	937.25
Lamp-posts, etc.....	224.25
Wire.....	802.05
Conduit construction.....	140.00
Conduit supplies.....	164.04
Repairs to pavements.....	32.39
Line supplies.....	81.70
Poles.....	262.60
Hardware.....	121.00
Instruments and apparatus.....	27.28
Labor pay roll.....	138.25
Total.....	<u>2,930.81</u>

WIRES UNDERGROUND.

Receipts.

Appropriation.....	\$7,000.00
Repayments.....	962.83
Total.....	<u>7,962.83</u>

Expenditures.

Cable.....	1,376.73
Lamp-posts, etc.....	1,138.70
Conduit construction.....	1,401.00
Conduit supplies.....	1,351.87
Repairs to pavements.....	565.08
Wire.....	110.57
Hardware.....	31.10
Instruments and apparatus.....	45.00
Hauling.....	14.03
Line supplies.....	60.00
Traveling expenses.....	2.86
Labor pay roll.....	993.00
Total.....	<u>7,089.94</u>

ADDITIONAL CABLES.

Receipts.

Appropriation.....	\$5,000.00
Repayments.....	11.29
Total.....	<u>5,011.29</u>

Expenditures.

Cable.....	4,886.97
Labor pay roll.....	122.50
Total.....	<u>5,009.47</u>

Respectfully submitted.

WALTER C. ALLEN,
Electrical Engineer.Capt. J. L. SCHLEY,
Corps of Engineers, United States Army,
Assistant to the Engineer Commissioner, District of Columbia.

REPORT OF THE CHIEF CLERK OF THE ENGINEER DEPARTMENT.

WASHINGTON, D. C., October 1, 1914.

SIR: I have the honor to submit the following report of the operations of this office for the fiscal year ended June 30, 1914:

Communications received, briefed, recorded, and indexed.....	13,955
Vouchers prepared.....	448
Letters sent.....	8,000
Contracts drawn and indexed.....	158
Bonds approved and indexed.....	315

The tables accompanying this report show—

1. The expenditures from general appropriations for forage, horses, wagons, carts, etc.
2. Statement of contracts entered into during the year.
3. Schedule of proposals received during the year.

Very respectfully,

DANIEL E. GARGES,
Chief Clerk, Engineer Department.

Lieut. Col. CHESTER HARDING,
Corps of Engineers, United States Army,
Engineer Commissioner, District of Columbia.

Statement of expenditures from general appropriations for forage, horses, wagons, carts, etc., fiscal year 1914.

Assessment and per cent work, streets.....	\$1,150.00
Northwest schedule.....	95.00
Southwest schedule.....	28.00
Southeast schedule.....	101.00
Northeast schedule.....	104.00
Georgetown schedule.....	29.00
C Street, Seventeenth to Eighteenth.....	26.00
C Street, First to Fourth.....	54.00
Twenty-third Street, Kalorama Road to S Street.....	39.00
Repairs to streets.....	1,850.00
Sidewalks and curb.....	45.29
Sidewalks and curb, Patent Office.....	7.00
Sidewalks and curb, old post office.....	11.00
Repairs to suburban roads.....	291.92
Construction and repair, bridges.....	153.07
Q Street Bridge.....	410.00
Pennsylvania Avenue Bridge over Rock Creek.....	120.00
Construction, county roads and suburban streets.....	776.00
Repairs to schools.....	1,713.89
Repairs to police stations.....	104.50
Repairs to engine houses.....	270.11
Repair and storage building (fire department).....	14.24
Electrical department (lighting).....	705.47
Cleaning and repairing sewers and basins.....	8,723.98
Main and pipe sewers.....	127.06
Suburban sewers.....	1,104.95
Assessment and per cent, sewers.....	276.60
Interior park.....	12.10
Shelters, farmers' produce.....	28.17
Surveyor's office.....	618.38
Surveys, old subdivisions.....	73.11
New Central High School.....	255.40
New M Street High School.....	113.15
Congress Heights School, No. 111.....	25.00
Birney School.....	37.65
Parking commission.....	2,937.38
General expenses, water department.....	1,916.93
High service, water department.....	6,644.09
Street cleaning.....	233.75
Total.....	31,226.19

STATEMENT OF CONTRACTS.

Contracts entered into by the District of Columbia during the fiscal year 1914.

1. HIGHWAY IMPROVEMENTS.

No.	Name of contractor.	Nature of contract.
5489	G. B. Mullin Co.....	Grading Thirteenth Street NE., Rhode Island Avenue to Franklin Street.
5490	George Hyman.....	Grading Hamlin Street NE., Twelfth to Thirteenth Streets.
5520	A. L. Guidone & Co.....	Constructing Q Street Bridge.
5528	G. B. Mullin Co.....	Grading Colorado Avenue.

2. SEWER CONSTRUCTION.

5441	George Hyman.....	Macomb Street trunk sewer, section 2.
5442	Warren F. Brenizer Co.....	Naylor Road trunk sewer.
5450	George Hyman.....	Bureau of Engraving and Printing sanitary sewer.
5454	Warren F. Brenizer Co.....	Kenilworth outlet sewer.
5484	do.....	Sewers in Sixteenth Street heights.
5487	do.....	Outlet sewers in Anacostia.
5488	do.....	Outlet, Good Hope trunk sewer.
5499	do.....	Sewer in Barry Place.
5506	do.....	Illinois Avenue trunk sewer.
5510	do.....	Section 5, Rock Creek main interceptor.
5513	George Hyman.....	Sewers in Forty-fourth Street, etc.
5517	Warren F. Brenizer Co.....	Sewers in Broad Branch Road.
5518	do.....	Sewers in Conduit Road, etc.
5523	William F. Cush.....	Sewers in Kenilworth.
5524	Warren F. Brenizer Co.....	Poplar Point storm-water outlet sewer.
5535	do.....	Sewer in Seventh Street NW., between I Street and Mount Vernon Place.
5536	do.....	Sewer in Wisconsin Avenue and Jenifer Street.
5545	Roy B. Wenner.....	Sewer in Woodridge.
5546	do.....	Sewers in Foxhall Road, etc.
5547	Warren F. Brenizer Co.....	Pinehurst outlet sewer.

3. MATERIAL AND HAULING.

5396	Geo. B. Mullin Co.....	Hauling stone and screenings.
5397	Potomac River Clay Works..	Terra-cotta sewer pipe.
5398	Sun Co.....	Asphalt paving cement.
5400	National Mortar Co.....	Portland cement.
5401	Thos. Somerville Co.....	Terra-cotta sewer pipe.
5403	Morgantown Brick Co.....	Sewer invert brick.
5405	Lewis E. Smoot.....	Sand and gravel.
5407	Lynchburg Foundry Co.....	Cast-iron water pipe.
5408	American Sewer Pipe Co.....	Terra-cotta sewer pipe.
5409	Morris Iron & Steel Co.....	Miscellaneous castings.
5416	Washington Asphalt Block & Tile Co.	Furnishing asphalt paving block.
5443	North Carolina Granite Co..	Granite curb.
5444	Lynchburg Foundry Co.....	Cast-iron water pipe specials.
5449	do.....	Cast-iron water pipe.
5453	Fred J. White.....	Miscellaneous castings.
5470	Richard W. Mann.....	Hauling for schools.
5475	Standard Lime & Stone Co..	Limestone dust.
5481	Barrett Manufacturing Co....	Paving pitch.
5486	Joseph Swift.....	Sand and gravel.
5492	do.....	Gravel.
5503	United Brass Manufacturing Co.	Couplings and corporation cocks.
5404	The A. P. Smith Manufacturing Co.	Corporation cocks, etc.
5405	H. Mueller Manufacturing Co.	Brass fittings for water department.
5508	Bard Union Co.....	Union els.

4. BUILDING AND BUILDING REPAIRS.

5399	Samuel A. Gregory.....	Repairing furnaces, etc., in schools.
5404	Talcott & Poore.....	Heating system at Jefferson School.
5421	Coberth, Hanes & White Co..	Heating system, repair shop, fire department.
5459	do.....	Heating system, Congress Heights School.
5476	Melton Construction Co.....	Storage building for fire department.
5479	Metal Shelter Co.....	Shelter buildings at Tuberculosis Hospital.
5482	Melton Construction Co.....	Birney School addition.
5483	do.....	Congress Heights School addition.
5485	Skinker & Garrett.....	Alterations, etc., at District Jail.

Contracts entered into by the District of Columbia during the fiscal year 1914—Continued.

4. BUILDING AND BUILDING REPAIRS—Continued.

No.	Name of contractor.	Nature of contract.
5502	H. R. Heinke (Inc.).....	Chimneys at jail and Home for Aged and Infirm.
5509	Coberth, Hanes & White Co.....	Heating and ventilating at Birney School.
5512	E. Keeler Co.....	Boilers for District Jail.
5515	William E. Mooney.....	Shelter shed for farmers' produce market.
5522	Atkinson-Morse Destructor Co.....	Furnace for crematorium.
5525	William Dall.....	Central High School, constructing
5526	George Hyman.....	Grading and excavating at site of Central High School.
5532	Monarch Ventilator Co.....	Ventilating system at Force School.
5534	William E. Mooney.....	Alterations at fire-department storage building.
5540	Biggs Heating Co.....	Piping system, Washington Asylum.
5542	Samuel A. Gregory.....	Repairing furnaces, etc., in schools.

5. GENERAL SUPPLIES.

5392	Cuyler & Mohler.....	Plumbing material.
5394	Martin Wiegand.....	Lumber and furniture.
5395	Lansburgh & Bro.....	Dry goods and furniture.
5402	Albert L. Johnson.....	Hardware.
5406	Miller-Clagett Co.....	Groceries.
5410	Dulany-Vernay Co.....	Stationery and kindergarten supplies.
5411	Eureka Fire Hose Manufacturing Co.....	Fire hose.
5413	Lutz & Co.....	Saddlery and furniture.
5414	Prang Co.....	Stationery, books, etc.
5415	Lewis Flemer.....	Drugs.
5417	Chas. Hyass & Co.....	Hardware.
5419	R. Carter Ballantyne.....	Stationery, schoolbooks, etc.
5420	Grove Lime & Coal Co.....	Hardware.
5421	W. B. Moses & Sons.....	Furniture and dry goods.
5422	J. Ross Collins.....	Hardware.
5423	L. P. Steuart & Bro.....	Ice and fuel.
5425	Dulin & Martin.....	Stationery and furniture, etc.
5426	Thos. Somerville Co.....	Hardware and plumbing material
5427	Eagle Pencil Co.....	Stationery.
5428	Mathers-Lamm Paper Co.....	Do.
5431	Jas. B. Lambie Co.....	Hardware, plumbing material, etc.
5434	Geo. F. Muth & Co.....	Stationery, paints, etc.
5435	Remington Typewriter Co.....	Stationery.
5436	Fred A. Schmidt.....	Stationery, paints, etc.
5437	Mackall Bros.....	Drugs.
5438	R. P. Clarke Co.....	Stationery and dry goods.
5439	Browning & Middleton.....	Groceries.
5440	Kraemer & Duehring.....	Hardware.
5445	Z. D. Gilman.....	Drugs.
5446	Globe-Wernicke Co.....	Stationery and furniture.
5447	Chas. G. Stott & Co.....	Stationery.
5448	R. P. Andrews Paper Co.....	Do.
5451	Hugh Reilly Co.....	Paints.
5452	Guy, Curran Co.....	Dry goods.
5455	Milton Bradley Co.....	Stationery, schoolbooks, etc.
5456	J. W. Hunt & Co.....	Paints.
5457	J. Robert Somerville.....	Oils.
5458	Armour & Co.....	Groceries, meats, etc.
5460	Barber & Ross.....	Hardware, paints, etc.
5461	Julius Lansburgh Furniture & Carpet Co.....	Furniture.
5463	George M. Oyster.....	Milk and cream, furnishing.
5464	Hugh Reilly Co.....	Oils.
5465	Louis Hartig.....	Hardware, plumbing material, etc.
5467	National Electrical Supply Co.....	Hardware, electrical supplies, etc.
5468	Standard Oil Co.....	Oils and lubricants
5469	R. H. Hollingshead Co.....	Do.
5473	The A. S. Barnes Co.....	Schoolbooks.
5474	American Book Co.....	Do.
5477	Chas. Scribner's Sons.....	Do.
5478	Chas. E. Merrill Co.....	Do.
5480	Howard A. Houser.....	Milk and cream, furnishing.
5491	Joseph H. Cranford.....	Fuel oil, furnishing, for asphalt plant.
5493	John P. Agnew & Co.....	Fuel for workhouse.
5494	W. M. Galt & Co.....	Forage.
5496	Hoge & McDowell Co.....	Forage.
5497	American metal Co.....	Fig lead.
5498	Washburn-Crosby Co.....	Forage.
5501	R. Carter Ballantyne.....	School books.
5527	C. C. Birchard & Co.....	Song books for schools.
5529	Mary E. Squire.....	Do.

Contracts entered into by the District of Columbia during the fiscal year 1914—Continued.

6. MISCELLANEOUS.

No.	Name of contractor.	Nature of contract.
5391	Capital Towel Service Co.	Laundry work.
5393	The Foss Gas Engine Co.	Oil engine, generator and switchboard.
5412	Fred B. Miller & Bro.	Installing public scales.
5418	The Seagrave Co.	Chemical engine and hose wagon, furnishing.
5424	Ahrens-Fox Fire Engine Co.	Do.
5429	Thos. Dowling & Co.	Auctioneer services.
5430	Ahrens-Fox Fire Engine Co.	Motor fire engine.
5432	A. Rice Son & Co.	Horses for fire department.
5433	Philip Weaver & Son.	Lighters for use at workhouse.
5463	Union Foundry Co.	Lamp-posts.
5466	Cassidy & Son Manufacturing Co.	Lighting fixtures, James Ormond Wilson Normal School.
5471	Capital Electric Co.	Lighting fixtures, Normal School No. 169.
5472	A. P. Smith Manufacturing Co.	Fire hydrants.
5495	Standard Underground Cable Co.	Combination cable.
5500	Western Electric Co.	Do.
5507	F. E. Carpenter Co.	Wire fence for water department.
5511	Sudworth Printing Co.	Printing list of delinquent taxpayers.
5514	Philip Weaver & Son.	Lighters for workhouse.
5516	Bullard Machine Tool Co.	Boring and turning mill for water department.
5519	A. G. Spalding & Bros.	Playground equipment.
5530	Front Drive Motor Co.	Two tractors on engine and truck of fire department.
5531	Buffalo Steam Roller Co.	Road roller for surface division.
5533	Aluminum Castings Co.	Street-lamp frames.
5537	Gleason-Tiebout Glass Co.	Pieces of glass for street lamps.
5538	Foran Foundry & Manufacturing Co.	Lamp-post shafts, bases and casings.
5539	Ahrens-Fox Fire Engine Co.	Rebuilding fire engine No. 12.
5541	American Seating Co.	Assembly-hall chairs for Normal School No. 2.
5543	Samuel A. Gregory.	Hot-air furnaces for schools.
5544	Union Foundry Co.	Lamp-posts and accessories.
5548	Aumen Machinery Co.	Milling machine for fire department.

SCHEDULE OF PROPOSALS RECEIVED DURING FISCAL YEAR.

[Star (*) indicates proposal accepted.]

1. HIGHWAY IMPROVEMENTS.

Proposals for grading Thirteenth Street NE., from Rhode Island Avenue to Franklin Street, and for grading Hamlin Street NE., from Twelfth to Thirteenth Streets.

[Opened Sept. 8, 1913.]

Bidders.	Price per cubic yard for grading—	
	13th St. NE.	Hamlin St. NE.
	Cents.	Cents.
Geo. Hyman.	34½	* 23
W. F. Brenizer Co.	29	27
Austin Humphreys Construction Co.		33
Wm. F. Cush.	36	28½
G. B. Mullin Co.	* 27½	27½
E. G. Gummel.	29	25
Lyons Bros.	48	49½

*Proposals for the construction of concrete culverts in Hamlin and Franklin Streets NE.,
Washington, D. C.*

[Opened Sept. 8, 1913.]

Items.	Bidders.						
	Warren F. Brenizer.	Geo. Hyman.	R. J. Beall, jr.	Lyons Bros.	E. G. Gummel.	Chas. H. Tomp- kins.*	Joseph Caylor.
Culvert in Hamlin Street, be- tween 13th and 14th Sts. NE.: Class E concrete masonry, per cubic yard.....	\$8.00	\$8.00	\$8.60	\$7.95	\$7.00	\$7.40	\$7.67
Vitrified brick masonry, per cubic yard.....	22.00	25.00	24.50	25.00	25.00	20.00	21.50
Excavation, per cubic yard.	.50	.60	1.00	.50	1.00	.50	.67
Culvert in Franklin St. between 24th and 26th Sts., NE.: Class E concrete masonry, per cubic yard.....	8.00	.....	9.50	.....	7.00	7.40	7.57
Vitrified brick masonry, per cubic yard.....	22.00	.....	25.00	.....	25.00	20.00	21.50
Excavation, per cubic yard.	.50	.....	1.20	.....	1.00	.50	.73

Proposals for construction of Q Street Bridge across Rock Creek.

[Opened Oct. 28, 1913.]

Items.	Bidders.					
	A. L. Guil- done & Co., 131 E. 23d St., New York, N.Y. (*)	The United Construc- tion Co., Evans Bldg., Wash., D.C.	Hoge & Luebker Co. (Inc.), Dist. Nat. Bank Bldg., Wash., D.C.	Charles Fath & Co., Toledo, Ohio.	Davis Con- struction Co., Union Trust Bldg., Wash., D.C.	C. B. Clark & Co., 20 S. Calverton Road, Bal- timore, Md.
No. 1..... per cubic yard..	\$0.80	\$1.25	\$1.80	\$0.75	\$1.25	\$1.25
No. 2..... do.....	1.50	1.70	2.75	1.75	1.75	2.10
No. 3..... do.....	3.50	3.00	3.00	4.00	4.00	4.00
No. 4:						
Bid A.....	158,484.00	173,693.00	189,120.00	164,000.00	195,513.00	196,900.00
Bid B.....	155,000.00	160,000.00	174,970.00	159,000.00	177,042.00	162,800.00
Bid C.....	145,000.00	141,258.00	156,970.00	150,000.00	151,235.00	137,200.00
Bid D.....	155,500.00	167,783.00	168,630.00	167,000.00	190,472.00	177,400.00
Bid E.....	153,000.00	151,467.00	154,730.00	162,000.00	166,980.00	152,200.00
Bid F.....	144,000.00	143,361.00	152,260.00	153,000.00	147,996.00	133,300.00
Item (a)..... per cubic yard..	8.00	6.90	7.00	8.50	9.86	8.00
Item (b)..... do.....	8.50	11.50	10.00	10.00	10.51	9.00
Item (c)..... do.....	11.00	16.00	10.00	17.00	11.16	12.00
Item (d):						
Per bid A..... per cu. foot..	2.15	2.50	-----	2.75	2.70	3.50
Per bid D..... do.....	2.10	2.25	-----	2.85	2.26	3.10
Item (e):						
Per bids A and B..... do.....	3.45	2.60	-----	4.70	3.78	4.25
Per bids D and E..... do.....	3.40	2.35	-----	5.00	2.82	3.40
Item (f):						
Per bids A and B, linear foot.....	18.00	15.00	-----	21.00	20.78	24.50
Per bids D and E, linear foot.....	17.75	13.00	-----	23.00	16.40	19.50
Item (g):						
Per bids A, B, C..... each..	90.00	82.50	125.00	105.00	162.40	165.00
Per bids D, E, F..... do.....	86.00	82.00	100.00	115.00	125.21	130.00
Item (h):						
Per bids A, B, C..... do.....	60.00	41.00	75.00	95.00	90.42	55.00
Per bids D, E, F..... do.....	59.00	40.00	50.00	100.00	69.90	45.00
Item (i), per bids B, C, E, F, per cubic foot.....	1.60	1.00	1.20	2.20	1.14	.90
Item (j), per bids C and F, per cubic foot.....	1.80	1.25	1.50	3.75	1.67	1.10
Item (k), per bids C and F, per cubic foot.....	10.00	5.00	10.00	3.75	7.20	6.50

Proposals for grading sidewalk space on Girard Street NE., between Twelfth and Thirteenth Streets NE.

[Opened Nov. 5, 1913.]

Bidders.	Job complete, per cubic yard.	Job complete, per cubic yard.	
		Public space.	Private space.
	Cents.	Cents.	Cents.
Geo. Hyman *	23		
G. B. Mullin Co.		39	29

Proposals for grading in the District of Columbia.

[Opened Mar. 5, 1914.]

Items.	Bidders.				
	John G. Hall.	Harper & Voigt.	Warren F. Brenizer Co.	G. B. Mullen.*	C. H. Pearland & R. J. Vermillion.
	Cents.	Cents.	Cents.	Cents.	Cents.
Grading Colorado Ave., between 14th St. and Avenue of the Presidents.....per cu. yd.		34½			80
Price for material to be placed in Hamilton St. NW., per cubic yd.....	30½	55	27		80
Price for material to be disposed of by bidder, per cubic yard.....	26	34½		24	

Proposals for making repairs to asphalt pavements, for the period July 1, 1914, to June 30, 1916.

[Opened June 10, 1914.]

Items.	Bidders.		
	Baltimore Asphalt Block & Tile Co., Baltimore, Md.	The Cranford Paving Co.*1	Eastern Paving Co., Penn Square Building, Philadelphia, Pa.
1. Laying standard asphalt pavement (2½ inches asphalt surface, 2 inches binder before compression) with 6-inch concrete base:			
(a).....per sq. yd.	\$1.79	\$1.74	\$1.72
(b).....do.	1.74	1.66½	
2. Laying standard asphalt surface (2½ inches before compression):			
(a).....per sq. yd.	.81	.68	
(b).....do.	.77	.62	.71
3. Laying asphalt binder (in connection with resurfacing work):			
(a).....per cu. ft.	.32	.27	
(b).....do.	.30	.26	.31
4. Laying standard asphalt surface (for repairs and miscellaneous work, cuts, etc.):			
(a).....per cu. ft.	.61	.52	
(b).....do.	.59	.47	.56
5. Laying asphalt binder (for repairs and miscellaneous work, cuts, etc.):			
(a).....per cu. ft.	.48	.41	
(b).....do.	.46	.39	.43
6. Laying standard asphalt for repairs, etc., within the space required by law to be kept in repair by street railway companies:			
(a).....per cu. ft.	.61	.57	
(b).....do.	.59	.52	.60

* Award made on Class B.

Proposals for making repairs to asphalt pavements, for the period July 1, 1914, to June 30, 1916—Continued.

Item.	Bidders.		
	Baltimore Asphalt Block & Tile Co., Baltimore, Md.	The Cranford Paving Co.	Eastern Paving Co., Penn Square Building, Philadelphia, Pa.
7. Laying asphalt binder for repairs, etc., within the space required by law to be kept in repair by street railway companies:			
(a).....per cu. ft..	\$0.48	\$0.46	
(b).....do.....	.46	.44	\$0.50
8. Laying asphaltic concrete pavement (2-inch asphalt concrete surface after compression) with 6-inch concrete base:			
(a).....per sq. yd..	1.78	1.67	
(b).....do.....	1.72	1.63	1.69
9. Laying asphaltic concrete surface (2 inches asphalt after compression):			
(a).....per sq. yd..	1.03	.97	
(b).....do.....	.99	.93	.97
10. Laying asphaltic concrete surface (in connection with resurfacing work):			
(a).....per cu. ft..	.69	.55	
(b).....do.....	.65	.51	.69

2. SEWER CONSTRUCTION.

Proposals for construction of outlet, Naylor Road trunk sewer.

[Opened July 17, 1913.]

Items.	Bidders.			
	Whiting-Turner Construction Co.	Dorsey & Miller Co.	Warren F. Brenizer.*	Geo. Hyman.
<i>Section No. 1.</i>				
Ordinary excavation.....per cu. yd..	\$0.55	\$0.90	\$0.50	\$1.50
Driving piling.....per lin. ft..	.21	.19	.16	.19
Lumber in place.....per 1,000 ft. b. m..	55.00	47.00	43.00	47.00
Concrete invert masonry "B".....per cu. yd..	8.20	6.90	6.75	8.00
Concrete arch masonry "B".....do.....	8.20	6.90	6.75	8.00
Vitrified-brick masonry.....do.....	22.00	21.00	21.00	20.00
Sewer-brick masonry.....do.....	14.00	14.00	13.00	14.00
<i>Section No. 2.</i>				
Ordinary excavation.....per cu. yd..	.55	.90	.50	.75
Concrete invert masonry "B".....do.....	8.20	6.90	6.75	8.00
Concrete arch masonry "B".....do.....	8.20	6.90	6.75	8.00
Vitrified-brick masonry.....do.....	22.00	21.00	21.00	20.00
Sewer-brick masonry.....do.....	14.00	14.00	13.00	14.00

Proposals for constructing section 2 of Macomb Street trunk sewer.

[Opened July 17, 1913.]

Items.	Bidders.		
	Warren F. Brenizer Co.	Whiting-Turner Construction Co.	Geo. Hyman.*
Ordinary excavation.....per cu. yd..	\$0.50	\$1.40	\$0.20
Concrete masonry "B".....do.....	7.00	9.50	7.75
Vitrified-brick masonry.....do.....	21.00	22.00	20.00
Sewer-brick masonry.....do.....	13.00	14.00	14.00

Proposals for construction of Kenilworth outlet sewer.

[Opened July 31, 1913.]

Bidder.	Sewer A.		Sewer B.		
	Special 18-inch diameter outlet.	Sewer brick masonry laid.	Ordinary excavation.	Sewer brick masonry.	18-inch diameter pipe sewer laid.
W. F. Brenizer Co.*.....	\$1.20	\$16.00	\$1.00	\$14.00	\$0.75

Proposals for construction of outlet, Good Hope Run trunk sewer.

[Opened July 31, 1913.]

Items.	Section 1.		Section 2.	
	Warren F. Brenizer Co.*	Dorsey Miller Co.	Warren F. Brenizer Co.*	Dorsey Miller Co.
Ordinary excavation.....	\$0.55	\$0.90	\$0.55	\$0.90
Piling driven.....	.16	.18		
Lumber in place.....	43.00	45.00		
Concrete masonry B.....	6.80	6.90	6.80	6.90
Concrete masonry arch B.....	6.80	6.90	6.80	6.90
Vitrified brick masonry.....	21.00	21.00	21.00	21.00
Sewer brick masonry.....	14.00	14.00	14.00	14.00

Proposals for construction of Bureau of Engraving and Printing sanitary sewer.

[Opened July 31, 1913.]

Items.	Bidders.	
	Warren F. Brenizer Co.	Geo. Hyman.*
Ordinary excavation.....	\$0.70	\$0.60
Sewer brick masonry.....	13.00	13.00
12-inch diameter pipe sewer.....	.60	.55

Proposals for construction of outlet trunk sewers C, D, and E.

[Opened July 31, 1913.]

Items.	Bidders.	
	Warren F. Brenizer Co.*	Dorsey & Miller Co.
Ordinary excavation.....	\$1.00	\$1.00
Piling in place.....	.19	.25
Lumber in place.....	48.00	50.00
Concrete masonry B.....	9.00	9.50
Concrete masonry arch B.....	9.00	9.50
Vitrified brick masonry.....	21.00	22.00
Sewer brick masonry.....	14.00	16.00

* Bid same for each sewer.

Proposals for the construction of Illinois Avenue trunk sewer, between Gallatin and Kennedy Streets.

[Opened Sept. 18, 1913.]

Items.	Bidders.	
	W. F. Brenizer Co.*	E. G. Gummel.
Ordinary excavation.....per cu. yd..	\$0.60	\$0.80
Concrete masonry B.....do....	7.00	7.20
Vitrified-brick masonry.....do....	21.00	23.00
Sewer-brick masonry.....do....	14.00	16.00

Proposals for the construction of sewers in Sixteenth Street Heights, north of Walter Reed Army General Hospital.

[Opened Sept. 18, 1913.]

Items.	Bidders.	
	E. G. Gummel.	The Warren F. Brenizer Co.*
Ordinary excavation.....per cu. yd..	\$0.70	\$0.50
Concrete masonry B.....do....	7.20	7.00
Vitrified-brick masonry.....do....	25.00	22.00
Sewer brick masonry.....do....	17.00	14.00
24-inch diameter pipe sewer.....per lin. ft..	1.20	1.10
12-inch diameter pipe sewer.....do....	.70	.70
10-inch diameter pipe sewer.....do....	.65	.60

Proposals for the construction of section 5, Rock Creek main interceptor, between Klinge Ford Road and Pierce's Mill Road.

[Opened Sept. 18, 1913. Bidder: The Warren F. Brenizer Co.*]

Section A—sewer in open cut:		
Ordinary excavation.....per cu. yd..	\$0.75	
Concrete masonry B.....do....	8.00	
Vitrified-brick masonry.....do....	22.00	
Sewer-brick masonry.....do....	14.00	
Section B—sewer in tunnel:		
Excavation, per linear foot of tunnel.....	14.00	
For all masonry, per linear foot of sewer.....	8.50	

Proposals for the construction of sewer in Barry Place, between Eighth Street and Sherman Avenue NW.

[Opened Sept. 18, 1913. Bidder: W. F. Brenizer Co.*]

Ordinary excavation.....per cu. yd..	\$0.80
Concrete masonry B.....do....	6.75
Vitrified-brick masonry.....do....	21.00
Sewer-brick masonry.....do....	13.00

Proposals for constructing storm-water outlet channel, northeast boundary sewer.

[Opened Oct. 23, 1913. Bidder: The Warren F. Brenizer Co.]

Section A.....per cu. yd..	\$12.75
Section B.....do....	12.75

NOTE.—All bids rejected.

Proposals for the construction of sewer in Broad Branch Road.

[Opened Jan. 2, 1914.]

Items.	Bidders.				
	The Warren F. Brenizer Co.*	Wm. F. Cush.	E. G. Gummel.	Geo. Hyman.	R. J. Beall Construc- tion Co.
Ordinary excavation.....per cu. yd..	\$0.60	\$0.95	\$0.60	\$0.60	\$0.84
Sewer-brick masonry.....do....	14.00	15.00	15.00	15.00	16.00
10-inch diameter pipe sewer.....per lin. ft..	.55	.65	.55	.90	.65

Proposals for the construction of Poplar Point storm-water outlet to the established bulk-head line, Anacostia River improvement.

[Opened Jan. 2, 1914.]

Items.	Bidders.	
	E. G. Gummel.	W. F. Brenizer Co.*
Ordinary excavation.....per cu. yd..	\$0.50	\$0.70
Piling in place.....per lin. ft..	.25	.30
Concrete masonry E.....per cu. yd..	6.90	6.50
Sewer-brick masonry.....do....	15.00	14.00

Proposals for the construction of sewers in Conduit Road.

[Opened Jan. 2, 1914.]

Items.	Bidders.			
	E. G. Gummel.	Geo. Hyman.	R. J. Beall Construc- tion Co.	The Warren F. Brenizer Co.*
Ordinary excavation.....per cu. yd..	\$1.00	\$0.80	\$0.79	\$0.60
Concrete masonry E.....do....	6.00	8.00	10.00	6.50
Sewer-brick masonry.....do....	15.00	15.00	16.00	14.00
18-inch diameter pipe sewer in tunnel.....per lin. ft..	2.95	.90	.90	.80
15-inch diameter pipe sewer.....do....	.75	.85	.90	.70
12-inch diameter pipe sewer.....do....	.65	.80	.75	.65
10-inch diameter pipe sewer.....do....	.65	.70	.85	.60

Proposals for the construction of Kenilworth service sewers, section No. 1, west of Kenilworth Avenue and south of Douglas Avenue.

[Opened Jan. 2, 1914.]

Items.	Bidders.			
	E. G. Gummel.	Wm. F. Cush.*	W. F. Brenizer Co.	Geo. Hyman.*
Ordinary excavation.....per cu. yd..	\$1.25	\$0.59	\$0.70	\$0.90
Sewer brick masonry.....do....	16.00	13.00	14.00	15.00
12-inch diameter pipe sewer.....per lin. ft..	.65	.60	.65	.70
10-inch diameter pipe sewer.....do....	.60	.55	.55	.60

Proposals for the construction of outlet sewer in Forty-fourth Street NW.

[Opened Jan. 2, 1914.]

Items.	Bidders.		
	W. F. Brenizer Co.	E. G. Gummel.	Geo. Hyman.*
Ordinary excavation.....per cu. yd..	\$0.65	\$1.10	\$0.65
Sewer brick masonry.....do....	14.00	15.00	13.00
18-inch diameter pipe sewer.....per lin. ft..	.75	.85	.75

Proposals for constructing service sewer in Foxhall Road.

[Opened May 11, 1914.]

Items.	Bidders.			
	R. B. Wenner.*	Warren F. Brenizer.	Wm. F. Cush.	E. G. Gummel.
Ordinary excavation.....per cu. yd..	\$0.65	\$0.55	\$0.59½	\$1.00
Sewer brick masonry.....do....	18.00	13.00	13.50	16.00
12-inch diameter pipe sewer.....per lin. ft..	.36½	.60	.60	1.00

Proposals for constructing service sewer in Wisconsin Avenue, Jenifer Street, Forty-second Place, and Forty-second Street.

[Opened May 11, 1914.]

Items.	Bidders.						
	F. J. McGuire.	Warren F. Brenizer.*	R. B. Wenner.	E. G. Gummel.	Geo. Hyman.	R. J. Beall Construction Co.	Wm. F. Cush.
Ordinary excavation, per cu. yd.	\$0.70	\$0.45	\$0.65	\$0.85	\$0.50	\$0.55	\$0.59
Sewer brick masonry.....do....	16.00	13.00	18.00	15.00	14.00	15.50	13.50
18-inch diameter sewer pipe, per lin. ft.....	.85	.80	.77	.95	.75	.85	.75
15-inch diameter sewer pipe, per lin. ft.....	.75	.65	.70	.80	.65	.72	.70
12-inch diameter sewer pipe, per lin. ft.....	.65	.60	.36	.75	.55	.60	.64

Proposals for constructing service sewers in Woodridge, D. C.

[Opened May 11, 1914.]

Items.	Bidders.							
	E. G. Gummel.	R. B. Wenner.*	Warren F. Brenizer Co.	Geo. Hyman.	F. J. McGuire.	R. J. Beall Construction Co.	Wm. F. Cush.	Lyons Bros.
Ordinary excavation.....per cu. yd..	\$0.60	\$0.59	\$0.45	\$0.55	\$0.75	\$0.57	\$0.62	\$0.84
Sewer brick masonry.....do....	15.00	18.00	13.00	14.00	15.00	17.00	13.00	16.50
12-inch diameter pipe sewer, per lin. ft.	.60	.36	.63	.65	.65	.65	.64	.86
10-inch diameter pipe sewer.....do....	.55	.35	.48	.55	.60	.60	.55	.80

Proposals for constructing special deep service sewer in Seventh Street between I Street and Mount Vernon Place.

[Opened May 11, 1914.]

Items.	Bidders.		
	W. F. Brenizer Co.*	R. J. Beall Construction Co.	E. G. Gummel.
Ordinary excavation.....per cu. yd..	\$1.50	\$1.59	\$1.50
Sewer brick masonry.....do....	14.00	14.00	14.00
12-inch diameter pipe sewer.....per lin. ft..	.70	.70	.75

Proposals for constructing Bennings Road trunk sewer between the Anacostia River and Kenilworth Avenue.

[Opened May 11, 1914.]

Items.	Bidders.		
	E. G. Gummel.	W. F. Brenizer.	R. B. Wenner.
Ordinary excavation.....per cu. yd..	\$1.75	\$1.75	\$3.00
Sewer brick masonry.....do....	15.00	14.00	18.00
24-inch drain-pipe sewer.....per lin. ft..	1.27	1.20	1.00

All bids rejected.

Proposals for constructing the Pinehurst outlet sewer.

[Opened June 10, 1914.]

Items.	Bidders.	
	James W. Bean Contracting Co.	W. F. Brenizer Co.*
Ordinary excavation.....per cu. yd..	\$0.56	\$0.45
Concrete masonry D.....do....	8.35	8.00
Hauling, placing, and banding special molded concrete arch.....per lin. ft..	.26	.17
Sewer brick masonry.....per cu. yd..	15.00	15.00

3. HAULING.

Proposals for moving boilers at the District of Columbia Jail.

[Opened Nov. 10, 1913.]

Bidders.	Job complete
C. H. Lavender, 517 Thirteenth Street NW.....	\$725.00
Merchants Transfer & Storage Co., 920-922 E Street NW.*.....	647.00
Heine Safety Boiler Co., 1120 Pennsylvania Building, Philadelphia, Pa.....	997.00

Proposals for hauling one portable school, including furnace, from the grounds of the Hubbard School to the Park View site.

[Opened Sept. 19, 1913.]

Bidders.	Job complete.
Littlefield, Alvord & Co., Twenty-sixth and D Streets NW.*	\$43.50
Merchants Transfer & Storage Co., 920-922 E Street NW.*	33.00

4. BUILDING AND BUILDING REPAIRS.

Proposals for covering the vertical boiler and breeching at the Tuberculosis Hospital.

[Opened June 15, 1914.]

Bidders.	Job complete.
Asbestos Covering Co.	\$45.00
H. W. Johns-Manville Co.*	30.00

Proposals for retubing boilers in the Brightwood, Emery, Garnett, Grant, Peabody, and Wallach School buildings.

[Opened July 10, 1913.]

Items.	Bidders.				
	Weber & Thomas.	Cook-Kries & Co.	G. W. Fossberg.	J. E. Hurley.	H. F. Boswell.*
Retubing boilers:					
Brightwood School	\$122.10	\$157.00	\$108.00	\$110.00	\$99.20
Emery School	276.88	427.00	279.00	278.50	259.25
Garnett School	206.10	328.00	220.00	209.00	194.00
Grant School	206.10	273.00	219.00	209.00	194.00
Peabody School	202.20	427.00	209.00	205.50	190.40
Wallach School	237.89	372.00	244.00	239.50	222.80

Proposals for installing a heating and ventilating system for school No. 111, Congress Heights, D. C.

[Opened July 14, 1913.]

Bidders.	Job complete.
Coberth, Hanes & White Co.*	\$7,400
Walter E. Hill & Co.	7,985
Talcott & Poore	7,978
W. G. Cornell Co.	7,974
York Engineering Co.	8,127
Cook-Kries & Co.	8,686
Krug Heating Co.	7,753

Proposals for furnishing and installing, complete, electric lighting fixtures, conduits, telephone, clock and bell systems, Normal School No. 169, Georgia Avenue between Howard Place and Fairmont Street NW.

[Opened July 28, 1913.]

Bidders.	Price complete.
National Electric Supply Co.	\$4,650.00
J. E. Taylor & Co.	4,152.90
Carroll Electric	3,983.00
Capital Electric Co.*	3,659.00

Proposals for doing plumbing work at the Western High School.

[Opened July 23, 1913.]

Items.	Bidders.	
	Wm. Rothwell & Son.	Coberth, Hanes & White Co.
Job complete, using fixtures of:		
J. B. Clow & Sons.....	\$2,682	\$2,648
Wolff Manufacturing Co.....	2,525	2,486
John Douglas Co.....	2,595	2,543
J. L. Mott Iron Works.....	2,652	2,618
Haines, Jones, Cadbury Co.....		2,510
John Kelly & Bro.....		2,818

All bids rejected.

Proposals for repairing boiler at the public library.

[Opened Aug. 1, 1913.]

Bidders.	Job complete.
H. F. Boswell.....	\$12.33
J. E. Hurley.....	21.00
Webber & Thomas*.....	15.50
G. W. Forsberg.....	28.00

Proposals for constructing a repair and storage building for the Fire Department, D. C., to be erected on North Carolina Avenue S.E. between Sixth and Seventh Streets, adjoining Engine House No. 8.

[Opened Aug. 12, 1913.]

Bidders.	Job complete.
John Brennan.....	\$13,999
Skinker & Garrett.....	12,248
A. C. Moses Construction Co.....	16,276
S. H. Maddox & Co.....	12,200
H. J. Montgomery.....	12,631
The Melton Construction Co.*.....	11,265
McKay & Morris.....	11,889
W. E. Mooney.....	11,648
Upton-Smoot Construction Co.....	12,000
Burgess & Parsons.....	11,470

Proposals for alterations for accommodation of boilers and coal vault for the District Jail.

[Opened Aug. 26, 1913.]

Bidders.	Work complete.
Skinker & Garrett*.....	\$4,419
Burgess & Parsons.....	5,150
Wm. Rothwell & Son.....	5,200
W. E. Mooney.....	5,445
B. B. Knell.....	5,200

Proposals for the construction of an addition at the Congress Heights School (No. 111).

[Opened Aug. 26, 1913.]

Items.	Bidders.			
	Melton Construction Co.*	Skniker & Garrett.	Burgess & Parsons.	W. E. Mooney.
For the work complete.....	\$35,123	\$39,888	\$40,200	\$39,152
Alternate A.....	— 560	— 300	— 1,000	— 1,175
Alternate B.....	— 78	— 103	— 100	— 54
Alternate C.....	+ 248	+ 170	+ 150	+ 800
Alternate D.....	— 110	— 100	— 109	— 80
Alternate E.....	— 56	— 29	— 250	— 40
Alternate F.....	+ 2,384	+ 3,400	+ 3,000	+ 3,064
Alternate G:				
Congress Heights and Birney School addition.....	65,947	72,000	74,000	71,577
Separate contracts at a combined price of.....	65,947			

Proposals for making alterations and constructing an addition to the Birney School Building (No. 127).

[Opened Aug. 26, 1913.]

Items.	Bidders.				
	W. E. Mooney.	Skniker & Garrett.	Burgess & Parsons.	S. H. Maddox & Co.	Melton Construction Co.*
Work complete.....	\$33,425	\$32,988	\$34,700	\$31,200	\$31,424
Alternate A.....	— 100	— 200	— 125	— 118	— 189
Alternate B.....	— 70	— 97	— 150	— 40	— 57
Alternate C.....	— 100	— 45	— 200	— 115	.....
Alternate D.....	— 40	— 25	— 150	— 10	— 36
Alternate E.....	71,577	72,000	74,000	.....	65,947

Proposals for making alterations at No. 4 engine house.

[Opened Sept. 4, 1913.]

Bidders.	Job complete.
Soper & McDonald, 318 Maine Avenue SW.....	\$195.00
Barber & Ross, Eleventh and G Streets NW.*.....	300.00
Fred J. White, 462 Maine Avenue SW.....	325.00

Proposals for repairs to electric motor at the Powell and Cleveland Schools.

[Opened Sept. 5, 1913.]

Bidders.	Price repairs to Powell School motor.	Price repairs to Cleveland School motor.
National Electrical Supply Co.....	\$50.00	*\$10.00
Carroll Electrical Co.....	*45.00	15.00

Proposals for retubing boiler in Curtis School.

[Opened Sept. 8, 1913.]

Bidders.	Job complete.
J. E. Hurley, 1219 Ohio Avenue NW.....	\$156.00
Webber & Thomas, Eleventh and Water Streets SW.....	162.49
G. W. Forsberg, Eighth and Water Streets SW.....	140.00
H. F. Boswell, 1240 Seventh Street SW.*.....	139.45

Proposals for repairing stack at the Henry School Building.

[Opened Sept. 8, 1913.]

Bidder.	Job complete.
J. E. Hurley *.....	\$93.00

Proposals for constructing two 110 by 54 inch radial-brick chimneys for the new boiler plant of the District of Columbia Jail, Washington, D. C., and for boiler plant, Home for the Aged and Infirm, Blue Plains, D. C.

[Opened Oct. 7, 1913.]

Items.	Bidders.		
	Alphons-Custodis Chimney Construction Co.	H. R. Heinicke (Inc.).*	M. W. Kellogg Co.
For the 2 chimneys.....	\$3,610	\$3,285	\$3,747
For chimney at the District of Columbia Jail.....	1,950	1,685	2,129
For chimney at Home for Aged and Infirm.....	1,660	1,600	1,718

Proposals for new boilers and appurtenances, Washington Asylum and Jail.

[Opened Oct. 24, 1913.]

Items.	Bidders.					
	Evans, Almirall & Co.	Crook-Kries Co.	York Engineering Co.	Camden Heating Co.	Coberth, Ranes & White Co.	W. G. Cornell Co.
Item A, job complete.....	\$16,569	\$14,763	\$19,600	\$14,927	\$16,258	\$16,490
Item B.....	-1,274	-1,110	-1,262	-998	-900	-1,484
Item C.....	-300	-375	-330	-125	-310	-400
Item D.....	-125	-150	-175	-225	-175	-200
Item E.....	-800	-625	-577	-590	-485	-700
Item F.....	-4,979	-3,893	-1,859	-3,767	-2,800	-4,450

All bids rejected.

240 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Proposals for installing a heating and ventilating system for school No. 127, located on Nichols Avenue, between Franklin Street and Howard Avenue SE.

[Opened Oct. 28, 1913.]

Items.	Bidders.					
	Coberth, Hanes & White Co.*	Talcott & Poore.	D. D. Condon.	W. G. Cornell Co.	King Heating Co.	Walter E. Hill & Co.
Entire installation	\$8,620	\$10,472	\$9,600	\$8,811	\$8,819	\$8,512
Deduction if pipe covering is omitted.	450	10,182	319	290	225	330
Deduction if breeching covering is omitted.	65	10,400	66	60	50	69
Deduction if fire-box boilers set in single battery with plain flat grates are substituted for boilers covered by specifications	55	.....	55	360	400	400

Proposals for installing a steam-heating system for fire department repair shop, on North Carolina Avenue, between Sixth and Seventh Streets SE.

[Opened Oct. 28, 1913.]

Bidders.	Job complete.
D. D. Condon	\$1,225
Coberth, Hanes & White Co.*	1,013
King Heating Co.	1,386
Talcott & Poore	1,777

Proposals for constructing a furnace or retort in the public crematory on reservation No. 13, at Twenty-first and B Streets SE.

[Opened Nov. 10, 1913.]

Bidders.	Job complete.
Morse-Boulger Destructor Co.	\$2,600
Atkinson-Morse Destructor Co.*	2,490

Schedule of proposals for grill work at the Eastern High School.

[Opened Nov. 14, 1913.]

Bidders.	Job complete.
Fred S. Giehner	\$25.00
A. F. Jorss	23.00
Soper & McDonald*	12.50

Proposals for furnishing and installing two 125-horsepower boilers in the District of Columbia jail.

[Opened Nov. 18, 1913.]

Bidders.	Item 1.		Item 2.		Time of completion (working days).
	Job complete.	Alternate proposition.	Amount to be deducted if certain items are omitted.	Alternate proposition.	
The Babcock-Wilcox Co.....	\$4,373	\$3,850	\$806.00	\$806.00	75
Heine Safety Boiler Co.....	4,435	.....	766.00	.....	60
Crook, Kries & Co.....	4,650	.....	820.00	.....	75
E. Keeler Co.*.....	4,098	.....	13,251.00	.....	75

¹ Price, deduction included.

Proposals for electric lighting system—Police court.

[Opened Dec. 13, 1913.]

Bidders.	Price complete.	Alternate A.	Alternate B.
F. de B. Weston.....	\$198.28	\$25.00	\$9.50
Thos. J. Williams.....	120.00	140.00	140.00
Carroll Electric Co.....	75.00	93.00	82.50

All bids rejected.

Schedule of proposals for retubing two boilers at Eastern High School, No. 85.

[Opened Dec. 15, 1913.]

J. E. Hurley.....	\$285.00
Webber & Thomas.....	324.88
G. W. Forsberg.....	280.00
H. F. Boswell*.....	272.00

Proposals for constructing the Central High School Building, No. 173, between Eleventh Street, Thirteenth Street, Florida Avenue, and Clifton Street, Washington, D. C.

[Opened Dec. 15, 1913.—First letting.]

Items.	Bidders.			
	English Bros., Champaign, Ill.	Cramp & Co., 801 Deuckla Building, Philadelphia, Pa.	E. C. Gerhard Building Co., St. Louis, Mo. (no deposit; letter of explanation with bid).	Arthur Cow-sill, Hibbs Building, city (no deposit).
Price for building complete, as per plans and specifications.....	\$1,283,000	\$1,304,000	\$1,210,000	\$1,443,000
Time of completion.....	¹ 674	⁽²⁾	⁽²⁾	⁽²⁾
Alternate:				
A—add.....	1,800	10,000	7,000	11,000
B—add.....	15,000	13,175	11,000	14,000
C—add.....	1,450	1,850	—1,375	2,200
D—add.....	500	1,000	400	400
E—add.....	2,500	2,600	2,200	2,400
F—adu.....	1,400	1,475	1,300	1,800

¹ Working days.

² Specified time.

Proposals for constructing the Central High School Building, No. 173, between Eleventh Street, Thirteenth Street, Florida Avenue, and Clifton Street, Washington, D. C.—Continued.

Items.	Bidders.			
	English Bros., Champaign, Ill.	Cramp & Co., 801 Deukla Building, Philadelphia, Pa.	E. C. Gerhard Building Co., St. Louis, Mo. (no deposit; letter of explanation with bid).	Arthur Cow- sill, Hibbs Building city (no deposit).
Alternate—Continued.				
G—deduct.....	\$1,000	\$900	\$1,200	\$800
H—deduct.....	12,000	11,000	¹ 12,000 ² 12,750	13,500
I—add.....	800	825	600	920
J—deduct.....	600	650	900	700
K—deduct.....	50		30	100
L—add.....	2,400	1,000	1,000	1,050
M—deduct.....	10,000	10,300	10,000	7,500
N—deduct.....	5,500	5,000	¹ 4,500 ² 5,250	5,000
O—deduct.....	6,000	4,800	4,500	4,000
P—deduct.....	4,000	4,000	¹ 4,000 ² 4,200	8,200
Q—add.....	10,000	5,920	4,000	9,500
R—add.....	40,000	30,000	26,000	27,600

Items.	Bidders.			
	The Conners Bros. Co., 157 Plain Street, Lowell, Mass.	William Dall, 501-504 Mar- ion Building, Cleveland, Ohio.	The Norcross Bros. Co., Worcester, Mass.	P. F. Gorm- ley Co., Union Trust Building, city.
Price for building complete, as per plans and specifications.....	\$1,409,000 (³)	\$1,328,750 (²)	\$1,456,789 (¹)	\$1,299,000 (³)
Time of completion.....				
Alternate:				
A—add.....	10,500	7,590	7,600	4,920
B—add.....	5,000	9,200	13,500	12,908
C—add.....	2,500	2,000	1,500	2,000
D—add.....	1,000	300	400	974
E—add.....	3,000	2,750	900	1,000
F—add.....	1,700	1,540	1,550	1,250
G—deduct.....	750	950	1,200	1,400
H—deduct.....	1,500	11,500	1,400	13,332
I—add.....	1,000	800	785	700
J—deduct.....	500	575	800	750
K—				
Add.....	250	125		
Deduct.....			125	121
L—add.....	2,500	2,750	1,375	1,623
M—deduct.....	11,000	8,500	24,000	10,728
N—deduct.....	5,000	4,750	5,100	3,570
O—deduct.....	4,500	5,750	4,000	3,800
P—deduct.....	4,250	3,586	4,000	1,000
Q—add.....	12,000	5,100	1,000	
R—add.....	45,000	25,375	27,000	25,260

¹ Writing.² Figures.³ Specified time.

Proposals for constructing the Central High School Building, No. 173, between Eleventh Street, Thirteenth Street, Florida Avenue, and Clifton Street, Washington, D. C.—Continued.

Items.	Bidders.			
	H. N. Leighton Co., Minneapolis, Minn.	John T. Brady & Co., 103 Park Avenue, New York, N. Y.	James L. Parsons, 816 Union Trust Building, city.	George A. Fuller Co., Munsey Building, city.
Price for building complete, as per plans and specifications.....	\$1,293,869	\$1,269,000	\$1,415,000	\$1,339,000
Time of completion.....	1 646	1 500	(2)	(3)
Alternate:				
A—add.....	8,976	6,200	10,750	6,000
B—add.....		8,600	12,500	14,000
C—add.....	2,500		1,500	1,700
D—add.....		250	750	900
E—				
Add.....	2,770		2,500	2,600
Deduct.....		2,000		
F—add.....	1,450	1,850	1,300	1,500
G—deduct.....	12,946	1,550	1,300	1,000
H—deduct.....	12,410	13,500	13,000	12,000
I—add.....	720	800	750	900
J—deduct.....	575	600	750	750
K—				
Add.....				50
Deduct.....		100		
L—add.....	2,460	1,800	1,000	1,500
M—deduct.....		5,000	12,000	10,500
N—deduct.....	5,480	5,000	4,750	6,000
O—deduct.....	5,940	4,000	4,000	6,000
P—deduct.....	3,419	3,600	4,800	3,500
Q—add.....		10,000	5,000	5,500
R—add.....	33,689	45,000	26,000	24,000

¹ Working days.

² Specified time.

³ 20 months.

NOTE.—Explanation of alternates on above schedule:

Alternate A.—If the District of Columbia does not furnish the matt face brick, the contractor will furnish same in accordance with specifications.

Alternate B.—If wood block flooring is substituted for the finished wood floor in all corridors above the ground floor and in the library over front entrance.

Alternate C.—If metal weather stripping is included.

Alternate D.—If "Mill White" is substituted throughout where water paint is specified as called for under "Painting."

Alternate E.—If Crowe stokers are used in place of Jones stokers.

Alternate F.—If brick-lined steel boiler settings are used in place of brick settings.

Alternate G.—If "Vento" heaters are used in place of wrought-iron pipe coils.

Alternate H.—If air washers are omitted.

Alternate I.—If a Cochrane metering feed water heater is used.

Alternate J.—If approved rubber-covered wire is used in place of 30 per cent Para rubber covered.

Alternate K.—If Alba glass reflectors are used in place of Holophane reflectors.

Alternate L.—If self-winding secondary clocks are used in place of minute-interval clocks.

Alternate M.—If the painting of all plaster walls and ceilings throughout the building as specified under "Painting" is omitted.

Alternate N.—If the vacuum cleaning system is omitted.

Alternate O.—If refrigerating plant, coolers, etc., are omitted.

Alternate P.—If the laundry machinery, the marking machine, the key boards, tags, and pins, trucks, and fiber boxes as specified under "Gymnasium apparatus" are omitted.

Alternate Q.—If "Argentine" or "Carara" polished white glass is used throughout for toilet and shower bath partitions instead of Tennessee marble, as specified under "Plumbers' marble work."

Alternate R.—If the common brick are furnished by the contractor, instead of the Occoquan or District brick mentioned in the specifications.

All bids rejected.

Proposals for construction shelters for farmers' produce market, between Tenth and Twelfth, B and Little B Streets NW.

[Opened Dec. 29, 1913.]

Bidders.	Price complete for 27 bents of shed.	Price per bent for 10 additional bents.
H. J. Montgomery	\$9,000.00	\$321.00
W. E. Mooney*	8,469.00	330.00
P. F. Gormley Co.	9,383.00	347.00
Arthur M. Poynton	8,800.00	350.00
Chesapeake Iron Works	10,198.00	370.00
C. A. Schneider Sons	9,203.00	341.00
John A. Schneider Iron Co.	10,500.00	390.00
W. H. McCray	9,785.00	345.00
Geo. E. Wyne	8,600.00	325.00
Martin & Brown	8,748.00	330.00
Arthur Cowsill	8,936.00	312.00
Burgess & Parsons	10,000.18	350.00
Skunker & Garrel	8,614.00	316.00
Adrian H. Aylor	11,500.00	355.00
Wm. Rothwell & Son	10,925.00	404.50
Wm. B. Upton	9,100.00	328.00
Penn Bridge Co.	8,700.00	32.50

Proposals for installing stereopticon circuit in the John Eaton School.

[Opened Jan. 15, 1914.]

Bidders.	Job complete.
Carroll Electric Co.	\$42.50
National Electrical Supply Co.	51.00
Thos. J. Williams*	40.00

Proposals for doing concrete and brick work at No. 6 Engine House.

[Opened Jan. 24, 1915.]

Bidder.	Job complete.
Fred Drew*	\$275.00

Proposals for furnishing and erecting ironwork, etc., at No. 6 Engine House, District of Columbia Fire Department.

[Opened Jan. 24, 1914.]

Bidders.	Job complete.
Soper & McDonald*	\$588.00
Fred S. Giehrer	982.25
C. A. Schneider Sons	1,133.00
Martin & Brown	880.00

Proposals for installing electric light and power systems in machine shop for fire department, located on North Carolina Avenue SE., between Sixth and Seventh Streets SE.

[Opened Feb. 9, 1914.]

Bidders.	Job complete.
The Carroll Electric Co.	\$823.00
National Electrical Co.*	795.00

Proposals for excavating and grading site and athletic field for Central High School No. 173, between Eleventh and Thirteenth, Florida Avenue and Clifton Streets NW.

[Opened Mar. 2, 1914.]

Bidders.	Job complete.
David M. Andrew Co.....per cu. yd..	\$0.79
F. G. Gummel.....	66,960.00
John T. Brady.....	63,900.00
George Hyman*.....	49,000.00
G. B. Mullin Co.....	49,449.00
The Warren F. Brenizer Co.....	69,000.00
Allen & Cush.....	85,000.00
R. B. Wenner.....	85,490.00

Proposals for constructing the Central High School Building, No. 173, between Eleventh Street, Thirteenth Street, Florida Avenue, and Clifton Street NW.

[Opened Mar. 2, 1914—Second letting.]

Items.	Bidders.			
	P. F. Gormley Co., Union Trust Building, Washington, D. C.	Hiram Lloyd Building & Construction Co., 803 Odd Fellows Building, St. Louis, Mo.	English Bros., Ahern's Building, Champaign, Ill.	The Norcross Bros. Co., Worcester, Mass.
Price building complete as per plans and specifications.....	\$1,043,715	\$1,117,000	\$1,013,000	\$1,106,600
Time of completion.....	(1)	(1)	2 674	(1)
Alternate:				
A, add.....	4,920	10,500	7,280	7,600
E, add.....	3,000	2,800	2,500	3,400
G, deduct.....	1,000	1,000	1,000	600
J, deduct.....	700	800	600	600
M, deduct.....	10,000	13,000	10,000	10,000
R, add.....	26,400	27,000	26,000	27,000
S, deduct.....	2,500	3,000	3,000	3,500
T, deduct.....	1,600	1,000	1,500	1,200
U, deduct.....	2,500	3,900	3,900	3,500
V, deduct.....				100
W, deduct.....	* 2,859	1,500	1,600	2,000
X, deduct.....		1,200	200	200

Items.	Bidders.		
	Geo. A. Fuller Co., Munsey Building, Washington, D. C.	John T. Brady Co., 103 Park Avenue, New York.	E. C. Gerhard Building Co., 518 Victoria Building, St. Louis, Mo.
Price building complete as per plans and specifications.....	\$1,042,000	\$1,019,000	\$1,017,000
Time of completion.....	(1)	2 500	(1)
Alternate:			
A, add.....	6,000	12,000	6,600
E, add.....	2,600	2,000	2,000
G, deduct.....	1,000	1,072	975
J, deduct.....	700	2,200	700
M, deduct.....	10,900	10,000	12,000
R, add.....	24,000	30,000	26,000
S, deduct.....	4,000	3,000	3,900
T, deduct.....	1,700	1,800	1,700
U, deduct.....	3,500	1,900	600
V, deduct.....	500		3,500
W, deduct.....	1,300	1,400	2,700
X, deduct.....	300	100	1,500

¹ Specified.

² Working days.

³ Add.

Proposals for constructing the Central High School Building, No. 173, between Eleventh Street, Thirteenth Street, Florida Avenue, and Clifton Street, NW.—Continued.

Items.	Bidders.		
	William Dall, 501-504 Marion Building, Cleveland, Ohio.*	Cramp & Co., 801 Denckla Building, Philadelphia, Pa.	W. A. Chester- man, 1007 West Broad Street, Richmond, Va.
Price building complete as per plans and specifications..	\$994,000	\$1,010,000	\$1,189,000
Time of completion.....	1 425	(²)	(²)
Alternate:			
A, add.....	8,500	10,000	10,500
E, add.....	2,000	300	3,150
G, deduct.....	500	900	700
J, deduct.....	700	650	700
M, deduct.....	9,000	10,000	15,000
R, add.....	25,000	27,000	28,000
S, deduct.....	4,000	5,000	3,610
T, deduct.....	1,350	1,400	1,600
U, deduct.....	2,000	4,000	3,700
V, deduct.....	1,500	.....	3,000
W, deduct.....	3,000	650	2,000
X, deduct.....	500	\$ 400	200

¹ Working days.² Specified.³ Add.

NOTE.—Explanation of alternates mentioned on above schedule.

Alternate A.—If the District of Columbia does not furnish the mat face brick, the contractor will furnish same in accordance with specifications.

Alternate E.—If Crowe stokers are used in place of the stokers specified, add.

Alternate G.—If "Vento" heaters are used in place of wrought-iron pipe coils, deduct.

Alternate J.—If approved rubber-covered wire is used in place of 30 per cent para rubber covered, deduct.

Alternate M.—If the painting of all plaster walls and ceilings throughout the building as specified under "Painting" is omitted, deduct.

Alternate R.—If the common brick are furnished by the contractor, instead of the Ocoquan or District brick mentioned in the specifications, add.

Alternate S.—If all cut stone in the two light courts is omitted, and the brick pilaster treatment in the courts eliminated, deduct.

Alternate T.—If the ash hoist is omitted, deduct.

Alternate U.—If the 100-kilowatt generator unit is omitted, deduct.

Alternate V.—If turbo generators are substituted for engine-driven generators specified, deduct.

Alternate W.—If wood base as specified for classrooms is substituted for marble base throughout the corridors (retaining marble in the vestibules and stair halls), deduct.

Alternate X.—If cast-iron grilles over the warm-air inlets throughout the building (except the auditorium) are replaced with diffuser blades and wood trim, deduct.

Proposals for making alterations and repairs to repair shop of fire department.

[Opened Apr. 17, 1914.]

Bidders.	Work complete.
Skinker & Garrett.....	\$1,427.00
The Melton Construction Co. (Inc.)	1,090.00
Wm. Rothwell & Son.....	1,190.00
W. E. Mooney *.....	1,041.00

Proposals for piping systems, etc., for new boiler plant, Washington Asylum and Jail.

[Opened May 11, 1914.]

Items.	Bidders.		
	West End Heating & Eng. Co.	Biggs Heating Co.*	W. G. Cor- nell Co.
For the work complete.....	\$2,798.00	\$2,235.00	\$2,380.00
Deduction from price for omitting 2½-inch steam line, branches, etc., from tunnel end to traps, engine, washer, etc., in east wing of jail, also return lines from this apparatus in east wing.....	197.00	126.00	87.00
Deduction from price for blanking 8-inch header at C and omit 5-inch branches to Keeler boilers, omit boiler feed, cold-water and blow-off piping to two Keeler boilers.....	641.00	438.00	209.80

Proposals for furnishing boiler for engine house No. 25.

[Opened May 20, 1914.]

Bidders.	Price complete.
American Radiator Co.....	\$291.73
D. D. Condon *.....	370.00
The Talcott-Poore Co.:	
For Royal boiler.....	479.00
For Kripps boiler.....	344.00
Hart & Crouse Co.....	379.70
Spencer Heater Co.....	437.47

Proposals for furnishing and installing gas fixtures in the Congress Heights school building.

[Opened May 22, 1914.]

Bidders.	Price complete.
C. A. Muddiman & Co.....	\$87.50
The Elmer H. Catlin Co.:*	
Sample 84.....	26.50
Sample 207.....	38.30
O. R. Evans & Bro.....	27.60

Proposals for removing old frame school building from the grounds of the Birney School, No. 127, and doing plumbing and brick work.

[Opened June 17, 1914.]

Bidder, Sidney L. Hechinger:	
For doing all work called for in specifications.....	\$1,445.00
Alternate added by Mr. Hechinger "if granite steps should be desired" (in place of cement with safety treads).....	275.00
Bid rejected.	

5. MISCELLANEOUS.

Proposals for furnishing, delivering, and erecting steel fence at Willow Tree Park, Square 534.

[Opened June 25, 1914.]

Bidders.	Work complete.	Alternate.
The Enterprise Iron Works.....	\$3,946.25	\$2,273.75
A. F. Jorss.....	3,174.00	1,974.00
Anchor Post Iron Works.....	4,160.00	2,530.00
Chas. E. Spieden.....	2,558.00	1,516.00
Spieden & Clark.....	2,690.25	1,477.75
Fred. S. Glehner*.....	2,487.30	1,439.20
Newman Blacksten Co.....	4,968.00	3,051.00
C. A. Schneider's Sons.....	3,838.20	2,197.40
F. E. Carpenter (Co.).....	2,893.00	1,684.00
Rudolph Gersmann (Inc.).....	3,937.50	2,562.00
Van Horn Iron Works.....	4,766.00	2,906.00
Be-mont Iron Works.....	4,487.00	2,321.00
The William Bayley Co.....	3,700.00	1,950.00
Fred J. White.....	2,886.00	1,773.00
F. P. Smith Wire & Iron Works.....	4,273.00	2,643.00
Sofer & McDonald.....	3,100.00	1,792.57

Proposals for making sewer and water connections at Nos. 57 and 59 N Street SW.

[Opened June 8, 1914.]

Bidders.	Jobs complete.	
	57 N Street.	59 N Street.
Isadore Freund.....	\$246.00	\$193.00
Maurice J. Colbert.....	157.00	180.00
Coberth, Hanes & White Co.*.....	145.00	177.00

Proposals for making sewer and water connections at Nichols Avenue and Trenton Place SE.

[Opened June 8, 1914.]

Bidders.	Job complete.
Isadore Freund.....	\$209.00
Coberth, Hanes & White Co.*.....	150.00
Maurice J. Colbert.....	188.00

Proposals for making sewer and water connections at 1829 W Street SE.

[Opened May 6, 1914.]

Bidders.	Job complete.
William E. Weigel *.....	\$148.00
Maurice J. Colbert.....	186.00
Coberth, Hanes & White Co.....	154.00

Proposals for venting sink at 1209 Wisconsin Avenue NW.

[Opened July 28, 1913.]

Bidders.	Job complete.
Coberth, Hanes & White Co.....	\$21.00
Samuel Artz.....	27.50
Foley & Curtin.....	42.00
The E. F. Brooks Co.....	27.13
Maurice J. Colbert.....	42.00

All bids rejected.

REPORT OF THE WHARF COMMITTEE.

WASHINGTON, September 24, 1914.

SIR: The wharf committee has the honor to submit the following report of its operations for the fiscal year ending June 30, 1914:

Accompanying is a list of wharf property now under lease on the Potomac River, the Anacostia River (or Eastern Branch) and James Creek Canal.

The rentals received from Potomac River wharves during the year amounted to \$23,706.20; from the Anacostia River, \$1,088.25; and from the James Creek Canal frontage, \$1,547.75, making the total amount received during the year \$26,342.20.

AVAILABLE WATER FRONTAGE.

The actual water frontage in the District of Columbia, with the exception of canals devoted to commerce, is about 2 miles. The total available water frontage, exclusive of canals, which is practicable of commercial development, is about 18 miles; this frontage, however, includes the portion set apart for parks and purposes of the United States—about 8 miles.

WHARVES ALONG THE WASHINGTON CHANNEL.

The largest amount of wharf property is that along the Washington Channel. This has a total frontage on the city side of 9,275 linear feet, of which 4,675 linear feet, between the grounds of the War College and the south curb line of N Street, is under the jurisdiction of the Chief of Engineers, United States Army, and the remaining 4,600 feet, between the south curb line of N Street south and Fourteenth Street SW., is under the jurisdiction of the Commissioners of the District of Columbia.

The leases for these wharves are generally for a period of five years, expiring March 15, 1918. The basis of rental is a net return of 4 per cent on the estimated value of the wharf property, with the requirement that the lessee shall make improvements and repairs. No appropriation has ever been made for making a general improvement of this water frontage, nor for dredging adjacent to the wharves, and the wharf property, particularly the piling structures, is deteriorating rapidly. An estimate of \$1,000 has been submitted to the commissioners for the purpose of making surveys, plans, and estimates for the general improvement of this frontage.

Along the frontage are located the harbor police station, the dock of the harbor boat, the house and dock of the fire boat, the District morgue, two District property yards, and the municipal fish wharf and market.

MUNICIPAL FISH WHARF AND MARKET.

In the District appropriation act for the fiscal year 1915 an appropriation of \$50,000 was made for reconstructing the wharves operated in connection with this market, and plans and specifications therefor are in course of preparation. The market buildings are under the control of the superintendent of weights, measures, and markets.

WHARVES ALONG THE ANACOSTIA RIVER.

This frontage is largely undeveloped owing to the uncertainty of ownership of the abutting land and riparian rights.

Seven leases to private parties have been made for land abutting on the river at the foot of streets where there is no question of title involved, and there are also located on this frontage the sewerage pumping station and wharf.

The matter of establishing title to the wharf property along this frontage is under investigation by the Attorney General.

WHARVES ALONG THE GEORGETOWN CHANNEL.

All the wharf property along this frontage is under private control with the exception of the foot of streets. Two leases have been entered into with private parties, one for the foot of Thirty-third Street and one for the foot of G Street.

JAMES CREEK CANAL.

This canal, which formerly extended from G Street to the Anacostia River, has been filled to N Street, and the bridges which formerly crossed the canal have been removed. From N to P Streets, a distance of about 1,000 feet, the frontage on both sides of the canal is under lease. From P Street to the outlet of the canal, a distance of 3,000 feet, it extends along the grounds of the War College and Engineer School. This portion of the canal is in need of dredging, but until a determination is made as to whether the canal is to be entirely filled, no estimate is submitted for dredging or improving the walls along its banks.

IMPROVEMENT OF THE HARBOR FRONT.

Under date of May 23, 1908, the commissioners forwarded to Congress plans for the improvement of the harbor front, together with report thereon, which was printed as Senate Document 519, Sixtieth Congress, first session. No action has been taken by Congress on this report.

Improvements to a portion of the harbor frontage along the Washington Channel should be made, and when made should be upon some definite plan. If the estimate of \$1,000 heretofore referred to for surveys and plans is granted, it is the intention of the wharf committee to prepare new plans for the improvement of this frontage.

DANIEL E. GARGES, *Chairman*,
D. E. McCOMB,
RUSSEL DEAN,

Wharf Committee.

Lieut. Col. CHESTER HARDING,
Engineer Commissioner, District of Columbia.

List of wharf property under lease June 30, 1914.

POTOMAC RIVER FRONT.

Name of lessee.	Location.	Expires.	Water front- age.	Area.	Rental per year.	
R. M. Allen, from Mar. 15, 1914, to June 30, unexpired term of Dawson Boat Co.'s lease.	Sec. 2, structures 39 and 40 (see below).	Mar. 15, 1915	<i>Lin. ft.</i> 40	<i>Sq. ft.</i> 2,400	\$23.34	
American Ice Co.....	Sec. 2, structures 54 to 67, in- clusive, except structure 59.	Mar. 15, 1918	.....	61,200	3,048.24
Samuel Bensinger.....	Sec. 1, structures 26 to 30, in- clusive.	Sept. 30, 1917	120	7,000	460.00	
Capital Yacht Club.....	Foot of 9th St. SW., between structures 39 and 41.	June 30, 1915	24	2,080	75.00	
James H. Carter & Co.....	Sec. 3, structures 24 to 27, in- clusive.	Monthly.....	200	26,600	1,000.00	
L. A. Clarke & Son.....	Sec. 2, structures 68 to 77, in- clusive, including 70½.	Aug. 1, 1918	280	45,800	1,900.00	
Colonial Beach Co.....	Sec. 1, structures 31 to 37, in- clusive.	Mar. 15, 1918	132	8,000	500.00	
Cranford Paving Co.....	Foot of 31st St. NW.....	Feb. 1, 1918	53	.....	240.00
Dawson Boat Co., from July 1, 1913, to Mar. 15, 1914 (un- expired term assigned to R. M. Allen).	Sec. 2, structures 39 and 40 (see above).	.....	40	2,400	46.66
J. Maury Dove Co. (Inc.).....	Sec. 3, structures 39 and 40.....	Mar. 15, 1915	168	38,000	1,570.00	
Do.....	Foot of G St. NW.....	Monthly.....	100	.....	120.00
G. W. Forsberg.....	Sec. 2, structures 22 to 33, in- clusive, except 24, and struc- tures 118, 119, and 120.	Mar. 15, 1915	156	18,000	733.00	
W. E. Garner et al.....	Sec. 2, structures 36, 37, and 38.	Mar. 15, 1916	44	3,320	100.00	
Edw. J. Gardner, from July 1, 1913, to Dec. 31, 1913 (unex- pired term assigned to Wm. A. Ragan).	Sec. 3, structure 21.....	.....	20	1,600	37.50
E. Madison Hall, from July 1, 1913, to May 16, 1914, 10½ months; turned over to pur- chasing officer, District of Columbia, except structure 81, turned over to superin- tendent of weights, meas- ures, and markets.	Sec. 2, structures 78, 79, 80, 81, 82, 85, 86, 87, and 88, except land occupied by fish houses of A. J. White and E. G. Hammond.	.....	.....	26,800	1,050.00
Wm. C. Hamburg.....	Sec. 3, structure 23.....	Apr. 15, 1915	18	1,440	60.00	
Johnson & Wimsatt.....	Sec. 3, structures 5 to 11, in- clusive.	Mar. 15, 1918	190	43,500	2,244.00	
Mount Vernon & Marshall Hall Steamboat Co.	Sec. 1, structures 59, 62, 63, and 64.	.....do.....	125	10,000	600.00
Norfolk & Washington Steam- boat Co.	Sec. 1, structures 41 to 49, in- clusive, 57 to 69, inclusive.	.....do.....	220	20,300	1,500.00
Do.....	Sec. 1, structures 60 and 65 to 72, inclusive.	Dec. 16, 1916	190	44,000	2,345.00	
Potomac & Chesapeake Steamboat Co.	Sec. 2, structures 11, 12, 13, 14, 15, 16, 17, 17½, 18, 19, 20, and 21.	Mar. 15, 1918	198	35,600	1,596.00	
Wm. A. Ragan, also unex- pired term of lease of Edw. J. Gardner, from Jan. 1 to Mar. 15, 1914.	Sec. 2, structure 22.....	Mar. 15, 1915	{	45	2,600	100.00
	Sec. 3, structure 21.....			20	1,600	37.50
Frank M. Roberts, from July 1, 1913, to May 15, 1914, then transferred to superintend- ent of weights, measures, and markets	Foot of 13½ St. SW.....	Monthly.....	126	11,015	385.00	
Lewis F. Smoot, from July 1, 1913, to Apr. 24, 1914, then transferred to superintend- ent of weights, measures, and markets.	Foot of 14th St. SW.....	.....do.....	233	27,960	914.00

List of wharf property under lease June 30, 1914—Continued.

POTOMAC RIVER FRONT—Continued.

Name of lessee.	Location.	Expires.	Water frontage.	Area.	Rental per year.
Jos. P. Stephenson, trading as Stephenson & Bro.	Sec. 2, structures 1 to 10, inclusive.	Jan. 31, 1917	<i>Lin. ft.</i> 300	<i>Sq. ft.</i> 59,900	\$2,300.00
Wimsatt & Church.....	Sec. 2, structures 34 and 35..... Sec. 2, structures 89 to 97, inclusive; structures 98 to 129, inclusive.	Mar. 15, 1918	80 550	18,000 125,300	720.00
District of Columbia, municipal fish wharf and market.	Sec. 3, structures 1 to 4, inclusive, and fish houses on structure 84, sec. 2; office-building structure 81, sec. 2: Foot of 13½ St. Foot of 14th St.		126 233	11,015 27,960	
District of Columbia, under jurisdiction of purchasing officer.	Sec. 2, structures 78, 79, 80, 82, 85, 86, 87, and 88. Sec. 2, structures 41, 42, and 43 to 53, inclusive.		183	26,648	
District of Columbia, fire-boat wharf.	Sec. 1, structures 39 and 40.....				
District of Columbia morgue.	Sec. 1, structures 41 and 42.....				
District of Columbia harbor master's wharf.	Sec. 1, structure 38, and sec. 2, slip between structures 41 and 42.				
					23,706.20

ANACOSTIA RIVER (EASTERN BRANCH).

Name of lessee.	Location.	Expires.	Water frontage.	Rental per year.
Harry D. Bailey.....	North side, just west of Anacostia Bridge to west abutment wall of old Anacostia Bridge.	Oct. 18, 1914	<i>Feet.</i> 81.0	\$76.00
C. C. Carlsen.....	Water front, between building lines of 4th St. SE.	June 1, 1915	50.0	50.00
Edward S. Dean.....	Water front, between the lines of N St. SE.	Monthly.....		67.50
Eastern Power Boat Club.....	Directly west of the west abutment of the old Anacostia Bridge.	June 30, 1916	93.0	162.75
District of Columbia sewer division.	Foot of 1st St. SE., opposite lot 1, square south of square 744.		198.0	
Thos. W. Smith.....	Square south of square 744.....	Nov. 5, 1914	132.0	132.00
Lewis E. Smoot.....	Foot of 3d St. SE., square 803.....	Apr. 1, 1916	106.3	400.00
Standard Oil Co.....	Water front, between building lines of Q St. SE.	Dec. 31, 1915		200.00
United States, Superintendent Capital Building and Grounds.	Foot of 1st St. SE., opposite square south of square 744.		40.0	
Total.....				1,088.25

JAMES CREEK CANAL.

Name of lessee.	Location.	Expires.	Water frontage.	Rental per year.
W. A. Anderson.....	Part of parcel No. 8.....	Oct. 1, 1915	<i>Feet.</i> 127	\$158.75
Gallier & Huguely.....	Parcels Nos. 5, 7, and 11.....	June 30, 1915	277	207.75
Lewis Jefferson.....	Parcel No. 9.....	do.....	100	75.00
Robert Murphy.....	Parcels Nos. 1 and 3.....	do.....	445	173.50
Henry Raun.....	Parcel No. 31.....	Nov. 7, 1914	50	25.00
George C. Taylor.....	Part of parcel No. 8.....	Nov. 15, 1914	136	225.00
Do.....	Parcels No. 4 and 6 and south part of parcel No. 8.	Feb. 1, 1915	195	171.25
Urban & Bradley.....	Parcel No. 13.....	Mar. 15, 1915	125	84.00
Washington Brick & Terra Co.	Parcels Nos. 2 and 10.....	June 30, 1915	570	427.50
Total.....				1,547.75

TOTAL RENTALS

Potomac River front.....	\$23,706.20
Anacostia River (Eastern Branch).....	1,088.25
James Creek Canal.....	1,547.75
Total.....	26,342.20

REPORT OF THE BOARD FOR THE CONDEMNATION OF INSANITARY BUILDINGS.

WASHINGTON, September 26, 1914.

GENTLEMEN: We have the honor to submit the following report of the transactions of the board for the condemnation of insanitary buildings for the year ended June 30, 1914.

Houses on which action was taken in response to notice for the year ended June 30, 1914.

	Demolished.	Repaired.
Buildings in alleys.....	36	54
Buildings in streets.....	71	123
Total.....	107	177

Buildings acted upon since the creation of the board for the condemnation of insanitary buildings up to and including June 30, 1914

	Examined.	Demolished.	Repaired.	Pending.
Buildings in alleys.....	1,101	639	430	32
Buildings in streets.....	2,261	1,286	892	83
Total.....	3,362	1,925	1,322	115

Total number of meetings of the board for the condemnation of insanitary buildings for the year ended June 30, 1914.....	17
Preliminary notices served.....	164
Condemnation notices served.....	27
Condemnation signs affixed to buildings.....	22
Total.....	230
Inspections and miscellaneous visits made during the year in connection with the inspection of buildings and the service of notices.....	4,623
Cases referred during the year to other departments for appropriate action under existing regulations.....	521
Estimated number of tenants required to secure other quarters in streets and alleys through action on the part of the board for the condemnation of insanitary buildings for the year ended June 30, 1914.....	281
Total number since the creation of the board.....	5,574
Estimated number benefited by repairs in streets and alleys for the year ended June 30, 1914.....	377
Estimated number benefited by repairs in streets and alleys since the creation of the board.....	4,501

Four cases have been referred to the corporation counsel for appropriate action in the police court which resulted in the vacation and removal of the buildings in question.

No cases are pending before the Supreme Court of the District relative to the condemnation of property.

It has been necessary for the board to demolish two buildings on account of the refusal of the owners to remove the buildings.

Special attention has been and is still being given to structures unprovided with sewer and water connections with a view of assisting the health department in eliminating box privies by making the owner or owners provide such connections or remove the structure if the condition does not warrant the expense of connecting it with public sewer and water main.

The houses in alleys remaining at the present time are in a fairly good state of repair and their condemnation under the building regulations is not warranted.

Many repairs have been made by the owners and agents on dwellings in both streets and alleys, for which no notices were served, and, consequently, no record was kept by the board.

Respectfully submitted.

R. G. POWELL,
Captain, Corps of Engineers, United States Army,
Assistant to the Engineer Commissioner.

WM. M. WOODWARD, M. D.,
Health Officer, District of Columbia.

MORRIS HACKER,
Inspector of Buildings, District of Columbia.
Board for the Condemnation of Insanitary Buildings.

The COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

REPORT OF ASSISTANT ENGINEER IN CHARGE OF ROCK CREEK PARK.

WASHINGTON, August 25, 1914.

SIR: I have the honor to submit herewith a report of operations and statement of expenditures in Rock Creek Park for the year ending June 30, 1914.

The amount appropriated for the care and improvement of the park and of Piney Branch parkway was \$21,000. This was expended as shown in the accompanying statement.

The general work of care and maintenance of the park, including mowing, repairs to roads and paths, etc., was done at a cost of approximately \$12,000.

Walls were constructed at the west end along the approach of the bridge across Rock Creek at Pierce's mill to replace wooden railings, at a cost of \$1,416.82.

The road across the northern end of the park, between the Beach Drive and Daniels Road, was completed, thus affording a new outlet westward from the park.

Work was begun on the construction of a roadway in the Piney Branch parkway, intended to connect the Beach Drive with Seventeenth Street NW. north of Newton Street. The grading for this roadway was partly completed, at a cost of \$1,377.42, and it was then discontinued.

During the winter months a considerable amount of fallen and dead timber was cleared up and converted into firewood, a part of which was disposed of through the superintendent of charities. The cost of the clearing was \$1,664.06.

The macadamized roads were oiled and kept in repair. Numerous extensions were made to bridle paths and footpaths, and these were improved and cleared. Farming operations were continued for the purpose of utilizing some of the vacant ground to produce feed for the horses belonging to the park.

The arboretum was increased through the United States Bureau of Forestry, which furnished a number of trees, which were planted and cared for by the park police.

Six temporary dry closets were built at points used for picnicking.

The general use of the park by the public is largely increasing year by year, and especially the use by picnicking parties and pedestrians, for whose benefit many paths and footbridges have been built. The south and central parts of the park are easily accessible from street car lines at several points, and as this fact becomes known to pedestrians they are becoming more numerous in proportion to the whole number of persons who frequent the park.

The vehicular traffic is largely increasing, and in order to relieve the congestion which occurs at times by distributing this traffic it will be necessary to provide several new roadways across the park from east to west and to continue to widen as far as practicable the existing roadways. It is, however, impracticable at many points to widen these roadways without excessive cost and destruction of natural scenery, which is prohibited in the act creating the park. It is proposed to do as much work of this class within the coming year as will be practicable with the limited amount available after providing for maintenance.

Respectfully submitted.

L. R. GRABILL,
Assistant Engineer, Rock Creek Park, District of Columbia.

ENGINEER COMMISSIONER, DISTRICT OF COLUMBIA,
Secretary Board of Control, Rock Creek Park.

Job No.	Items of expenditure.	Stone and screenings.	Hauling stone and screenings.	Pipe and cement.	Lumber and fitting.	Oil.	Labor.	Material, etc.	Cost.
2600	General care.....			\$47.37			\$9,840.41		\$9,887.78
2601	Grading Wise Road.....						743.05		743.95
2602	Farming.....						334.51		334.51
2603	Plumbing, convenience station.....						25.60		25.60
2604	Building walls, bridge approach.....			99.90			1,316.92		1,416.82
2605	Oiling roads.....					\$617.40	172.21		789.61
2606	Grading Piney Branch parkway.....			22.11			1,355.31		1,377.42
2607	Removing dead and fallen timber.....						1,664.06		1,664.06
2608	Hauling and spreading sand for oiling.....						240.75	\$34.16	274.91
2609	Temporary closets.....						63.00		63.00
	Cobble gutters (contract work).....							653.70	653.70
	Crushed stone.....	\$1,249.52	\$547.85						1,797.37
	Blacksmith work.....							295.69	295.69
	Coal.....							27.36	27.36
	Forage.....							867.77	867.77
	Tools and implements.....							136.44	136.44
	Lumber.....				\$142.45				142.45
	Paint.....							34.36	34.36
	Nails, etc.....							18.11	18.11
	Kerosene.....							14.53	14.53
	Dynamite, etc.....							14.25	14.25
	Steam pump and drill (hire).....							34.20	34.20
	Miscellaneous.....							375.99	375.99
	Balance.....							10.12	10.12
	Total.....	1,249.52	547.85	169.38	142.45	617.40	15,756.72	2,516.68	21,000.00

REPORT OF THE SUPERINTENDENT OF THE DISTRICT BUILDING.

WASHINGTON, D. C., August 12, 1914.

GENTLEMEN: We have the honor to report that in addition to the routine work incident to the maintenance of the Municipal Building for the fiscal year 1914 several changes were made to the building and mechanical equipment, among others the rearrangement of the board room as an auditorium, equipped with 227 fixed chairs, and the lighting system thereof changed from the direct to the indirect method; the fire department storeroom, located in room 17, was eliminated and the room remodeled and assigned to the accounting branch of the physical valuation division of the public utilities commission; room 5, formerly occupied by the fire department, was assigned to the engineering branch of the same division; and room 3 was subdivided by the erection of a wood and glass partition, and the east side thereof occupied by the chief of the fire department, who formerly occupied room 5.

A direct motor-driven ventilating fan was installed in the bacteriological laboratory.

During the year 31,453 kilowatt hours of current was furnished the electrical department for the telephone, fire-alarm, and police patrol-box system, and electrical power, steam, compressed air, and hot water for industrial purposes were supplied to two laboratories of the health department and the laboratory of the inspector of asphalt and cement.

Experience of the past year compels us to reiterate our statement of the preceding annual report that—

“The estimates for the fiscal year ending June 30, 1913, provided for a reduction of the force of cleaners at \$240 per annum (charwomen) from 40 to 36. Congress reduced the number to 30, beginning July 1, 1912. Experience of the past 13 months and careful observation of cleaning methods, force, and results in a number of other buildings of similar character in Washington and an analysis of the cost in this building, two Federal buildings, and one first-class commercial office building has demonstrated that this number (30) is inadequate to maintain present-day standards of cleanliness, without work-

ing the charwomen greatly in excess of what obtains in buildings of this character, and the increase asked for in the estimates for the next fiscal year (to 35) is the minimum which should be employed to produce satisfactory results."

Details of expenditures are shown in the auditor's report of the appropriation for the "Maintenance of Municipal Building, District of Columbia, 1914."

Very respectfully,

MARK BROOKE,
Captain, Corps of Engineers, United States Army,
J. L. SCHLEY,
Captain, Corps of Engineers, United States Army,
Jointly Superintendents of the Building.

The COMMISSIONERS OF THE DISTRICT OF COLUMBIA
(Through Lieut. Col. Chester Harding, Corps of Engineers, United States Army, Engineer Commissioner, District of Columbia).

REPORT OF SUPERINTENDENT OF STABLES.

WASHINGTON, October 1, 1914.

SIR: I have the honor to submit the following report showing the operations of the stables under the care of the superintendent of stables, engineer department, District of Columbia, for the fiscal year 1914:

List of eight statements attached.

1. Location of stables and departments using same.
2. Number of employees and departments to whom assigned.
3. Number of horses and mules and departments to whom assigned.
4. Number of vehicles, etc., and departments to whom assigned.
5. Assignment of vehicles to officials and employees.
6. Amount of appropriations allotted for maintenance of engineer stables and expenditure of same.
7. Average cost of upkeep of horses during the fiscal year 1914.
8. Horses purchased.

What has proven to be a beneficial adjunct in connection with the operation of the engineer stables consists of about 50 or 60 acres of land located in Rock Creek Park, District of Columbia, through the extreme north end of which runs a fine stream of water. This tract was set aside for use by the District about five years ago through the courtesy of the board of control, Rock Creek Park, and was immediately made fertile with the accumulation of manure from the northwest engineer and water department stables. The land is now cleared and abundantly covered with a growth of fine grass, making it, together with the stream, an excellent pasture for horses which have become temporarily incapacitated. A rustic fence completely incloses the tract, permission for the erection of same having been granted at the time it was set aside for use by the District.

The system in vogue in connection with the transfer of horses and mules is, in my opinion, a worthy one and one to be commended from the point of humanity, it being the policy to transfer them from time to time when found incapacitated for the work in which engaged to a service slightly below that performed or one not quite so strenuous, instead of selling them and purchasing others. Thus the animals remain in the District's service, at the same time performing all of the work that is required, and as a final reward for their faithful service are sent to one of the farms connected with the District's institutions, where upon complete incapacitation they are destroyed.

The entire accumulation of manure at the engineer stables is now most advantageously disposed of, it being furnished to the institutions at Blue Plains and the workhouse at Occoquan, Va., in addition to which the institutions have available for their use the hand sweepings collected by the street-cleaning department. In the case of the former transfer is made by team while in the latter delivery is made at the First Street Wharf SW., and upon arrival of the barges from the workhouse laden with the construction material products of the institution, instead of returning light after discharging, they are loaded with manure and sweepings for the return trip. By this method the institutions have been furnished an excellent fertilizer at practically no cost.

For your consideration I beg to state that the transportation and hauling necessary in the routine work of the several departments of the District Government is now furnished in numerous ways, viz:

(1) Maintenance of stables, under my supervision, as enumerated in statement No. 1, said stables being located at different points—two in the southwest section of the city while the third is in the northwest section.

(2) Maintenance of stables, at various points, under the supervision of the immediate heads of departments.

(3) Hire of conveyances for officials and teams for hauling.

(4) Board of District horses and vehicles at livery stables.

It will be seen that in the maintenance of numerous stables the District, in each instance, is compelled to practically operate each stable independently of the others, in addition to which the District hires quite extensively teams for use in the sewer, surface, and water departments. Mention might here be made of the fact that on account of inclement weather, or other causes, it is often necessary that many teams under my supervision remain idle on account thereof, whereas they could on such occasions be engaged in the hauling of construction materials used in the erection of buildings or in other ways, an instance being the hauling of the workhouse products from their Tenth Street Wharf to the line of usage. Many other cases would arise whereby teams could be kept constantly at work.

It would therefore seem that it would be in the interest of practical and efficient administration for an institution as large as the District to maintain its own municipal barn under one superintendent who would be charged with the duty of furnishing the various departments with such transportation as they require in the proper conduct of the department, thereby obtaining a concentration of responsibility for the economical operation of same. In my opinion the District now owns a site on U Street NW., between Sixteenth and Seventeenth Streets, which, on account of its central location, would be well suited for the erection of such a barn.

Of course it is obvious for many reasons that the police and fire departments, as well as such institutions as are located on large tracts of land in or outside of the District, should be exempt from consideration in this connection.

Respectfully,

J. W. BEALE,

Superintendent of Stables, Engineer Department.

Capt. J. S. SCHLEY,

Corps of Engineers, United States Army, Assistant to Engineer Commissioner.

STATEMENT NO. 1.—*Location of stables and departments using same.*

1. *First and Canal Streets SW.*—Disbursing officer, plumbing inspector, sewer department, surface division (part), surveyor, and weights, measures, and markets.
2. *Second and Canal Streets SW.*—Electrical department.
3. *U Street stables, U Street between Sixteenth and Seventeenth Streets NW.*—Municipal architect, repair shop, surface division (part), engineer commissioner and assistants.

STATEMENT NO. 2.—*Number of employees and departments to whom assigned.*

Department.	Location of stable.	Employees.					
		Annual.			Per diem.		
		Black-smiths.	Drivers.	Watch-men.	Drivers.	Stable-men.	Watch-man.
All.....	First and Canal.....					2	
Do.....	U Street.....					1	
Do.....	All three.....			2			1
Electrical.....	Second and Canal.....				1		
Engineer commissioner and assistants.....	U Street.....		2		12		
Municipal architect.....	do.....				1		
Plumbing inspector.....	First and Canal.....				1		
Repair shop.....	U Street.....				3		
Sewer.....	First and Canal.....				27		
Do.....	U Street.....				1		
Surface.....	First and Canal.....	1			23		
Do.....	U Street.....				2		
Surveyor.....	First and Canal.....				3		
Weights, measures, and markets.....	do.....		1				

¹Chaffeur.

NOTE.—1 superintendent (annual).

STATEMENT No. 2.—*Number of employees and departments to whom assigned—Contd.*

RECAPITULATION.

Stable.	Annual.	Per diem.
All (superintendent, watchmen, stablemen).....	3	4
First and Canal Streets SW.....	2	54
Second and Canal Streets SW.....	1	1
U Street stables.....	2	9
Total.....	7	68

Grand total, 75.

STATEMENT No. 3.—*Number of horses and mules and departments to whom assigned.*

Department.	Location of stable.	Horses.	Mules.
Disbursing.....	First and Canal.....	1	.....
Electrical.....	Second and Canal.....	3	.....
Engineer commissioner and assistants.....	U Street.....	15	.....
Municipal architect.....	do.....	1	.....
Plumbing inspector.....	First and Canal.....	1	.....
Repair shop.....	U Street.....	2	4
Sewer.....	First and Canal.....	11	27
Do.....	U Street.....	1	.....
Surface.....	First and Canal.....	15	14
Do.....	U Street.....	5	.....
Surveyor.....	First and Canal.....	3	.....
Weights, measures, and markets.....	do.....	2	.....
Total.....		50	45

¹ See note under Statement No. 5.

RECAPITULATION.

Stable.	Horses.	Mules.
First and Canal Streets SW.....	33	41
Second and Canal Streets SW.....	3	.....
U Street stables.....	14	4
Total.....	50	45

Grand total, 95.

Horses and mules.....	95
Forage payable from engineer department allotment.....	77
Forage payable from appropriations direct.....	18
	<hr/> 95

STATEMENT NO. 4.—*Number of vehicles, etc., and departments to whom assigned.*

Item.	Departments.											Total.
	Emergency.	Disbursing.	Electrical.	Engineer com- missioner and assistants.	Municipal archi- tect.	Plumbing.	Repair shop.	Sewer.	Surface.	Surveyor.	Weights, meas- ures, and mar- kets.	
Automobile.....				1								1
Harness:												
Buggy, single.....		1		3	1	1	1	2	7			16
Carriage, double.....				11								11
Cart.....								5	8			13
Wagon—												
Single.....			1				2	14	15	3	2	37
Double.....			1				2	15	3		1	22
Vehicles:												
Buckboard, 2-horse.....	1											1
Buggies.....	1	1		2	1	1	2	2	6			16
Carriages, closed—												
1-horse.....				4								4
2-horse.....	1											1
Surreys.....				14					1			5
1-horse wag- ons.....			2				2	28	19	3	2	56
2-horse wag- ons.....			2				2	8	4		2	13
3-horse wag- ons.....								2				2

¹ See note under Statement No. 5.STATEMENT NO. 5.—*Assignment of vehicles to officials and employees.*

Title.	Vehicle.	Number.
Engineer commissioner.....	Automobile.....	1
Do.....	Closed carriage (1-horse) ¹	1
Do.....	Surrey (2-horse) ¹	1
Assistants to the engineer commissioner.....	Closed carriages (1-horse).....	3
Do.....	Surreys (1-horse).....	2
Do.....	Buggies ²	2
Engineer of highways.....	Buggy.....	1
Inspector, surface division.....	do.....	1
Do.....	do.....	1
Assistant engineer, surface division.....	do.....	1
Superintendent of streets.....	do.....	1
Inspector of asphalt and cements.....	do.....	1
Engineer of bridges.....	Surrey.....	1
Plumber, repair shop.....	Buggy.....	1
Carpenter, repair shop.....	do.....	1
Inspector of plumbing.....	do.....	1
Inspector, sewer department.....	do.....	1
Assistant engineer, sewer department.....	do.....	1
Disbursing officer.....	do.....	1
Municipal architect.....	do.....	1
Emergency.....	do.....	1
Do.....	Closed carriage (2-horse) ²	1
Do.....	Buckboard (2-horse) ²	1

¹ By reason of the District appropriation act for the fiscal year 1915, approved July 21, 1914, the following disposition was made of the equipment used by the engineer commissioner, District of Columbia: One 1-horse closed carriage, one 2-horse surrey, 1 set double harness, transferred to the purchasing officer, District of Columbia, for disposition. Two horses transferred to inspectors in engineer department and the horses used by those inspectors, which were incapacitated, were transferred to the District of Columbia Workhouse, at Occoquan, Va.

² These buggies have been transferred to the surface division for use in inspection work.

³ The following disposition was made of certain vehicles used for emergency purposes, since they were no longer needed: One 2-horse closed carriage, one 2-horse buckboard, transferred to the purchasing officer, District of Columbia, for disposition.

STATEMENT No. 6.—Amount of appropriations allotted for maintenance of engineer stables and expenditure of same.

Appropriation.	Amount.	Expended.		
		Forage.	Pay rolls.	Supplies (miscellaneous).
Municipal architect:				
Home for Aged and Infirm.....	\$22.61		\$22.61	
Fire department, repair building.....	43.27	\$28.17	15.10	
Interior park.....	12.10	12.10		
Shelter, farmers' market.....	28.17	28.17		
Schools—				
Birney.....	37.65		37.65	
Congress Heights.....	25.00		25.00	
M Street High.....	113.15	7.15	106.00	
New Central High.....	254.42	46.90	207.52	
Electrical engineer: Lighting.....	730.27	275.82	409.51	\$20.14
Superintendent of sewers:				
Assessment and permit work.....	254.14		254.14	
Cleaning and repairing.....	8,723.98	4,743.52	3,200.58	779.88
Main and pipe.....	127.06		39.90	87.16
Suburban.....	1,104.95	982.27	72.04	50.64
Superintendent of repairs:				
Repairs to engine houses.....	270.11	167.86	94.00	8.25
Repairs to police stations.....	105.20		82.00	22.50
Repairs to school buildings.....	1,713.89	1,402.89	248.75	62.25
Superintendent street cleaning: Cleaning, etc.....	233.75		233.75	
Engineer of highways:				
Bridge, Pennsylvania Avenue.....	120.00	120.00		
Bridge, Q Street.....	410.00	188.75	221.25	
Bridges, construction and repair.....	153.07	153.07		
Schedules—				
Georgetown.....	29.00	29.00		
Northeast.....	104.00	104.00		
Northwest.....	90.00	90.00		
Southeast.....	101.00	101.00		
Southwest.....	28.00	28.00		
Sidewalks and curbs.....	63.29	63.29		
Streets—				
Assessment and permit.....	1,150.00	658.43	274.25	217.32
Repairs to.....	1,850.00	967.26	443.50	437.24
Specific.....	1,021.00	820.88		200.12
Suburban roads, repairs to.....	335.00	44.19	260.75	11.06
Trust funds.....	218.00		218.00	
Surveyor:				
Salaries, etc.....	618.38	53.38	565.00	
Old subdivisions.....	73.11	73.11		
Superintendent water department: High service.....	607.24	78.49	528.73	
Total.....	20,770.81	11,267.70	7,560.03	1,896.56

STATEMENT No. 7.—Average cost of upkeep of horses during fiscal year 1914.

Forage, allowance for 1 horse for 1 month, contract prices 1914:	
100 pounds long rye straw, at \$1.247 per 100 pounds.....	\$1.25
420 pounds long hay, at \$1.217 per 100 pounds.....	5.11
384 pounds oats, at \$1.859 per 100 pounds.....	7.14
50 pounds bran, at \$1.548 per 100 pounds.....	.77
Total cost of forage for 1 horse per month.....	14.27
Total cost of forage for 1 horse per year.....	171.24
Shoes, per month, 80 cents.....	9.60
Total.....	180.84

STATEMENT No. 8.—Horse purchased.

[Appropriation: Repairs to streets.]

Number.....	1
Price.....	\$250.00

APPENDIX.

SPECIFICATIONS FOR PAVING STREETS WITH SHEET ASPHALT AND ASPHALTIC CONCRETE.

1. *Work.*—The work to be done under this contract will consist of paving with sheet asphalt and asphaltic concrete such streets, avenues, and roads in the District of Columbia or parts thereof, or doing any portion of such work, as may be ordered in writing by the Commissioners of the District of Columbia under appropriations for the fiscal year ending June 30, 1915. The commissioners especially reserve the right to regulate the time and order of executing work ordered under this contract as may appear most advantageous to the interests of the District.

2. *Amount of work.*—The estimated amount of this work is as follows:

	Sq. yds.
Standard sheet asphalt pavement on 6-inch concrete base.....	29 000
Vitrified-block gutters.....	4 500
Asphaltic concrete on 6-inch concrete base.....	17 000
Asphaltic concrete on a broken-stone base.....	1 000

These amounts are approximations only and may be considerably varied from; but they will be used in canvassing bids, and the awards will be based thereon. In scheduling the bids for the purpose of an award of contract there will be deducted from the total cost of doing the work as determined from the prices bid therefor and the quantities above stated, such sum as will represent the amount proposed by the bidder to be allowed to the District of Columbia and deducted from his contract prices for the use of Occoquan stone. The estimated amount of stone to be so used for the purpose of scheduling the bids as above is 5,600 cubic yards for asphalt pavements and 3,000 cubic yards for asphaltic concrete pavements, a total of 8,600 cubic yards. One award will be made to the lowest acceptable bidder for all the asphalt pavement, including their vitrified-block gutters, and another award to the lowest acceptable bidder for all the asphaltic concrete (items 3 and 4 of the proposal).

3. *Bids.*—The contractor will, for the prices bid, do all the work prescribed in these specifications; do all the necessary grading and trimming of the road-bed and all rolling; provide bridges, fences, and other means of maintaining travel on intersecting streets, roads, and railroads, and all private driveways after giving due notice to parties affected thereby; maintain the same in good and safe condition as long as may be necessary, and then remove such temporary expedients and restore such roads to their proper condition; provide watchmen, lights, fences, and other precautionary measures necessary to the protection of person and property; furnish all material (except as specified), and all tools and implements, labor, and transportation required to lay and put in complete order for use the specified pavement; and do each and all of these to the satisfaction of the engineer. Upon the completion of the work he will remove any temporary structures erected during the progress of the work, and restore all fixtures, pavements, and parkings, both public and private, to satisfactory condition.

4. *Old material.*—Old material removed from the streets will be the property of the District of Columbia, and the work of removal will be paid for at prices named in paragraph 13 of these specifications. Granite block, cobble, old curb, etc., must be removed to the nearest property yard, or to such other places as the engineer may direct.

5. *Grading and subgrade.*—Lines and grades will be established by the engineer, and no work will be commenced until these are given. The area over which the pavement is to be laid must be excavated to the proper depth below the surface of the pavement when completed, any objectionable or unsuitable matter below the bed being removed to such depth as may be directed by the

engineer and the space filled with suitable material thoroughly compacted. The bed, after being trimmed so as to be parallel to the surface of the pavement when completed, will be thoroughly compacted by rolling, with a roller weighing not less than 5 tons and by heavy ramming at places which can not be reached by the roller, dampening the bed before rolling and ramming, if required, to the satisfaction of the engineers. No extra allowance will be made for trimming or rolling, but the volume of earth, etc., removed will be paid for as grading of its class. Any filling will be done in layers not exceeding 12 inches in thickness, and all materials used for this purpose will be subject to approval. If improper or unsuitable material be used, it will be removed at the cost of the contractor. All measurements will be made in place and payments made thereon. Should the grading involve work in both "cut" and "fill," the measurement of it will be computed on the basis of the volume of the material in place in the "cut" only; the excavated material from the "cut" section deposited in the "fill" will not be again paid for as "fill." Should the amount of cut on the street not suffice to make the necessary fill, the amount borrowed from other designated localities will be paid for as grading.

STANDARD SHEET ASPHALT PAVEMENT.

6. *Concrete base.*—Upon the bed prepared as described in paragraph 5 there will be laid 6-inch foundation of concrete as directed, made of the following materials by volume:

One part Portland cement, 3 parts sand, 7 parts gravel.

Broken stone, run of the crusher, may be substituted for part or all of the gravel at the option of the contractor.

(a) *Cement.*—The cement used will be a standard brand of Portland cement, uninjured by age or exposure, and delivered at the work in original undamaged packages. The right is reserved to reject any cement that has not established itself as a high-grade Portland cement and has not been made by the same mill for two years and given satisfaction in use for at least one year under climatic and other conditions of at least equal severity as those of the work proposed. The contractor shall keep the cement in store, under proper cover, in the city of Washington, and shall properly protect it until used. The engineer shall have the right to test the cement as he judges necessary and to reject any or all lots. The cement, after being accepted, can not be transferred or used by the contractor on other work without the consent of the engineer commissioner. No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to extend over such length of time as the engineer commissioner may think necessary. The cement while in storage or upon the work, or while being hauled upon the work, shall be properly protected, and no cement shall be used which, in the opinion of the engineer commissioner, has been injured by age or exposure. The cement shall be kept by the contractor in store, under proper cover, in the city of Washington, subject to inspection for at least 40 days after notifying the inspector of asphalt and cements before it can be used on the streets, if deemed advisable by the engineer commissioner. Should the contractor's work be delayed by his failure to keep himself supplied with the necessary amount of approved cement, the District shall have the right to furnish him with tested cement from the stock on hand at its warehouse and charge said contractor with the cost of same at the rate of \$1.50 per barrel of Portland cement for each and every barrel so furnished and collect the amount due therefor from any moneys found to be due to said contractor by the District. All cement sacks are to be returned by the contractor, and for those not returned or not in good condition a charge of 10 cents per sack will be made.

No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to extend over such length of time, not exceeding 28 days, as the engineer commissioner may think necessary, said tests to be conducted in accordance with the methods prescribed in Circular 33 of the Bureau of Standards, United States Government specifications for Portland cement.

(b) *Sand.*—The sand used shall be clean, sharp river or pit sand, containing both fine and coarse grains, but free from sewage, mud, clay, mica, paper, leaves, chips, or other foreign matter, and not showing when shaken with water and after subsidence more than 5 per cent by volume of silt.

(c) *Broken stone.*—Stone used in concrete must be hard, durable, and properly broken to a size small enough to pass through a ring 2 inches in

diameter when the run of the crusher is substituted for gravel. The run of the crusher shall not contain over 1 per cent of material passing a No. 10 sieve. The stone shall be thoroughly cleansed from all foreign substance, and shall be screened and washed, if so ordered by the engineer. Sand, detritus, or any material other than hard angular fragments of stone will be considered foreign substances.

(d) *Gravel*.—Gravel shall be clean, washed gravel, and shall not contain pebbles greater than 2 inches in their largest dimensions, and shall run from that down to pea size, well graduated.

(e) *Occoquan stone*.—At the option of the commissioners there may be used in place of any part of the stone or gravel above specified as a constituent of concrete base, broken stone delivered from the quarries owned and operated by the District of Columbia at Occoquan, Va. The stone referred to will be issued to the contractor on the District wharf at Tenth and Water Streets SW., or on scows alongside the District wharf at the foot of Thirtieth Street W., or on scows alongside any wharf that the contractor may select where he may prefer to unload the material. The stone so furnished will be issued to the contractor on the basis of 2,500 pounds to the cubic yard, if issued by weight, and will be charged against him at a price therefor to be fixed by him as an item of his bid. This price, for deliveries at the District wharf at Tenth and Water Streets, is not to be less than 69 cents per cubic yard. The price for deliveries on scows at the foot of Thirtieth Street or at any other wharf selected by the contractor will be 15 cents per cubic yard less than the price bid for deliveries on the wharf at Tenth and Water Streets.

The use of Occoquan stone under the above arrangement may be required as to the whole or any part of the work covered by this contract. The stone proposed to be supplied will consist of a mixture about half and half of 2-inch and 1-inch stones, smaller fragments being excluded.

(f) *Water*.—Water used for mortar and concrete shall be fresh and clean, free from earth, dirt, or sewage, and shall be used in such quantity as the engineer may direct.

(g) *Platforms*.—Platforms shall be provided upon which all sand, gravel, and broken stone for concrete shall be placed when brought upon the line of the work, and kept there until used.

(h) *Mixing*.—The thorough mixing and incorporation of all material will be insisted upon. If done by hand labor, the dry cement and sand shall be turned over and mixed with shovels by skilled workmen not less than six times before the water is added; the stone or gravel, after being drenched with water, shall be added to the mixed sand and cement; the drenching shall not be done while the stone or gravel is in the wheelbarrow; the whole mass shall be thoroughly turned over with shovels, not less than four times, and mixed upon a water-tight platform until every particle of stone or gravel is completely enveloped with mortar. The whole operation of mixing and laying each batch shall be performed as expeditiously as possible, by the aid of machinery or a sufficient number of skilled men. If the concrete is mixed in batches requiring one barrel of cement, the platform must not be smaller than 10 feet by 12 feet, nor will a larger amount of concrete than can be made with one barrel of cement be allowed to be mixed in one batch by hand. In mixing by machinery the materials must be so delivered as to insure a uniform product of the specified proportions of all ingredients to the satisfaction of the engineer.

(i) *Setting*.—Concrete shall not be used after it has begun to show evidence of setting. No concrete which has once set shall be used as material for mixing a new batch.

Each batch of concrete after being mixed shall be spread in place in horizontal layers by means of shovels so as to give the requisite thickness after being tamped and shall then be thoroughly compacted. Any evidence of lack of compaction will be regarded as sufficient reasons for removal and replacement of the base. Hauling over base less than 3 days old must not be allowed unless planks are laid.

7. *Asphaltic binder*.—The binder course shall be composed of clean, broken stone, equal in quality to the stone for the base, and passing an inch and a quarter screen. Eighty-five per cent of this shall pass said screen in its longest dimensions, and of the remaining 15 per cent no piece shall have a larger dimension than $1\frac{1}{2}$ inches, and the stone, after passing the heating drums, shall not contain less than 5 nor more than 15 per cent of material passing a No. 10 screen.

The stone will be heated not higher than 350° F. in suitable appliances. It is then to be thoroughly mixed by machinery with asphalt cement, such as is acceptable for surface cement, penetration 60 to 90, at such temperature and in such proportions that the resulting binder will have life and gloss without an excess of cement. Should it appear dull from overheating or lack of cement it will be rejected. While hot it will be hauled upon the work, spread upon the base so that when compacted it will be at least 1½ inches in thickness, and immediately rammed and rolled until it is cold. Should the resulting course not show a proper bond it must be immediately removed and replaced by and at the expense of the contractor. Binder and top shall not be taken from the yard to the site of the work when weather conditions are, in the judgment of the engineer, unsuitable for the work of laying the pavement.

The contractor shall not enter upon a concrete base in order to lay the binder course until it has obtained sufficient strength for such a purpose, and during the period between laying the base and binder he shall properly protect it, and, when ordered by the engineer, shall sprinkle it in warm weather, between the hours of sunset and sunrise, as often as may be deemed necessary, and in cold weather cover it with a material suitable for its protection.

8. *Asphalt wearing surface.*—The wearing surface of the pavement shall be composed of asphalt, petroleum oil, asphalt cement, clean, sharp-grained sand, and fine absorbent mineral dust.

(a) *Asphalt.*—The asphalt shall be refined until homogeneous and free from water, and shall not at any time be heated to a temperature high enough to injure it. The refined product shall contain at least 90 per cent of bitumen soluble in carbon bisulphide, and 100 parts shall not require more than 30 parts of the flux to produce the asphalt cement described in paragraph 8c.

(b) *Petroleum oil.*—The oil in use in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation without cracking, until the oil has the following characteristics: Free from water and foreign matter; flash point not less than 300° F.; distillate at 400° for 18 hours, less than 10 per cent; the flash point shall be taken in a New York State closed oil tester.

The distillate shall be made with about 50 grams of oil in a small glass retort provided with a thermometer and placed in a copper holder. The residue in the retort, after distilling, must be fluid at 75° F. and not coarsely crystalline on cooling.

Any other softening agents approved by the engineer commissioner may be used in place of petroleum oil.

(c) *Asphalt cement.*—The asphalt cement must be of refined asphalt, fluxed when necessary with petroleum residuum, asphaltic oil, refined maltha, or other approved flux. The cement must be practically free from water and must be within the range of 40 and 70 penetration when tested at 77° F. on 10w penetration machine with No. 2 needle, 100 grams, 5 seconds. The degree of penetration to be fixed by the engineer commissioner.

Preference will be given to an asphalt cement that is not readily affected by the action of water, provided it is satisfactory in other respects. If an asphalt cement is accepted that is affected by water, some provision satisfactory to the engineer commissioner must be made to guard against the results of such action, and such work must be included in the price bid. The use of an asphalt under these specifications shall be subject to the approval of the engineer commissioner, and if an asphalt has been proposed for use by the contractor and approved by the engineer commissioner no change in the asphalt to be used shall be made unless with the approval of the engineer commissioner. If an asphalt or flux is submitted for use which has not been successfully used for a period of at least two years for paving under conditions similar to those existing in the District of Columbia, its use may be limited to such extent as may be deemed advisable, or it may be rejected for use entirely, in the discretion of the engineer commissioner.

The bitumen of the asphalt cement must comply with the following tests:

(1) It must be of such consistency that when tested at 32° F. it will not show a hardness below 10 penetration, and when tested at 115° F. it will not be softer than 350 penetration.

(2) When a briquette of the bitumen having a minimum cross section of 1 square centimeter, having a penetration of 50° to 53° at 77° F. is tested for ductility at 77° F., the bitumen must stretch at the rate of 5 centimeters per minute to a distance of 20 centimeters before breaking.

(3) When the bitumen is heated in an open tin box $\frac{3}{4}$ inch deep by $2\frac{1}{2}$ inches in diameter at a temperature of 300° F. for 18 hours in a hot-air oven it must not show a loss by volatilization of over 5 per cent, and it must not have been hardened over 50 per cent by this heating.

The asphalt cement must never be heated to a temperature that will injure it.

When the asphalt cement contains over 5 per cent of material that will separate by subsidence while in a molten condition it must be thoroughly agitated before drawing from storage and while in use in the supply kettles so as to insure a uniform cement.

These properties shall be determined by tests made by uniform methods, descriptions of which are on file in the office of the engineer commissioner.

(d) *Sand*.—The sand in use shall be free from mud, hard grained, and moderately sharp. In sifting it should have at least 15 per cent of material that would be caught on a 40-mesh-per-inch screen, 25 per cent of material that will pass an 80-mesh-to-the-inch screen, and 10 per cent at least must pass a 100-mesh-to-the-inch screen. If the sand to be used does not contain the desired fine material, mineral dust can be added to make up the deficiency, and in any case at least 5 per cent of such mineral dust shall be used. The amount of fine material may be increased at the discretion of the engineer commissioner.

(e) *Mineral dust*.—This shall be any fine Portland cement or limestone dust, the whole of which shall pass 30-mesh screen and at least 85 per cent pass a 100-mesh screen.

(f) *Asphalt paving mixture*.—The materials complying with the above specifications shall be mixed in proportion, by weight, depending upon their character and the traffic on the street and upon the character of the asphalt, and will be determined by the engineer commissioner, but the percentage of bitumen in any mixture soluble in carbon bisulphide shall not exceed the limits, 9 to 13 per cent. If the proportions of the mixture are varied in any manner from those specified, the mixture will be condemned, its use will not be permitted, and, if already placed on the streets, it must be removed and replaced by proper materials at the expense of the contractor.

The sand, or the mixture of sand and stone dust, and the asphalt cement will be heated separately to about 300° F. The dust, if limestone, will be mixed while cold with the hot sand in the required proportions and then mixed with the asphalt cement at the required temperature and in the proper proportion in a suitable apparatus, so as to effect a thoroughly homogeneous mixture. Sand boxes and asphalt gauges will be weighed in the presence of inspectors as often as may be desired.

Samples of all material entering into the composition of the pavement shall be supplied to the inspector of asphalt and cements, when required, in suitable tin boxes and cans; he shall have access to all branches of the works at any time, and shall have the right to obtain samples of all materials from the source of supply.

(g) *Laying asphalt surface*.—The pavement mixture prepared in a manner thus indicated will be brought to the ground in carts or wagons at a temperature of not less than 250° or more than 350° F.; the contractor must provide canvas covers for use in transit. It will then be shoveled into place and thoroughly spread to a thickness of at least $2\frac{1}{2}$ inches by means of hot iron rakes, in such manner as to give uniform and regular grade, so that after having received its ultimate compression it will have a net thickness of at least $1\frac{1}{2}$ inches. This depth will be constantly tested by means of gauges furnished by the engineer commissioner. The surface will then be compressed by steam rollers, after which a small amount of hydraulic cement will be swept over it, and it will then be thoroughly compressed by a steam roller weighing not less than 175 pounds to the inch run, the rolling being continued for not less than five hours for every 1,000 yards of surface. The street to be barricaded and the barricades to remain for such length of time as deemed necessary by the engineer commissioner. Binder or topping shall not be laid when weather conditions are, in the judgment of the engineer, unsuitable for the work of laying the pavement.

9. *Laying vitrified block*.—Vitrified-block gutters will ordinarily be $13\frac{1}{2}$ inches wide, laid on a concrete base 6 inches in depth, of the same material and proportions and laid in the same manner as prescribed in these specifications for the concrete base under asphalt pavements.

As soon as practicable after the concrete base has been laid, a dry mixture, composed of 4 parts of the sand specified in paragraph 6b, and 1 part of Portland cement, thoroughly mixed, will be spread thereon, as a bed for the paving

blocks, to the depth of not less than $\frac{1}{2}$ inch, and regulated so as to be exactly parallel to the finished grade of the gutter.

On the bed thus prepared for them the blocks will be set on edge, with the longest dimensions at right angles to the curb, or as directed by the engineer.

The longitudinal joints of each course of blocks laid must be broken by a lap of not less than 4 inches.

The blocks will then be carefully rammed by placing a plank over several courses and ramming the plank with a heavy rammer. The ramming will be continued until the blocks reach a firm, unyielding bed and present a uniform surface, with proper grade. Any lack of uniformity in the surface or defect in the grade must be corrected by taking up and relaying the blocks.

After proper ramming the entire gutter will be thoroughly grouted with a thin, easily flowing grout, of neat natural cement.

A similar construction of block to that described for the gutters may be used adjacent to railroad tracks; the base will in that case extend to the bottom of the crossties, or at least 6 inches thick.

The blocks will be furnished the contractor at the District property yards and must be hauled to the work at his expense.

10. *Asphaltic concrete on concrete base.*—(a) *Concrete base.*—The base is to conform in all respects to the specifications herein in relation to concrete base for sheet-asphalt pavements. (See paragraph 6.)

(b) *Paving materials.*—The paving materials shall be composed of crushed trap-rock screenings, concrete sand, and mineral dust in the following proportions by volume: Trap-rock screenings 3 part; concrete sand, 1 part; and mineral dust, at least 5 per cent of the above aggregate; mixed with asphaltic cement. The various constituents of the mineral aggregate and asphalt cement shall be of the same kind and conform to District specifications for such materials for the year ending June 30, 1913, as follows:

(c) *Trap rock.*—The trap rock shall be of a quality to be approved by the engineer and shall be equal to that used by the District of Columbia for macadam roadways. The crushed stone will vary in size from 1 inch to screenings, and shall be devoid of dust.

(d) *Sand.*—The sand shall be hard grained and moderately sharp. On sifting it should have at least 25 per cent of material that would be caught on a 20-mesh per inch screen and 5 per cent of material that will pass an 80-mesh to the inch screen. If the sand to be used does not contain the desired fine material, mineral dust can be added to make up the deficiency, and in any case at least 5 per cent of such mineral dust shall be used.

(e) *Mineral dust.*—This shall be any fine Portland cement or limestone dust, the whole of which shall pass a 30-mesh screen and at least 85 per cent pass a 100-mesh screen.

(f) *Asphalt.*—The asphalt shall be refined until homogenous and free from water and shall not at any time be heated to a temperature high enough to injure it. The refined product shall contain at least 90 per cent of bitumen soluble in carbon bisulphide and 100 parts shall not require more than 30 parts of the flux to produce the asphaltic cement described in paragraph 10h.

(g) *Petroleum oil.*—The oil in use in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation without cracking, until the oil has the following characteristics: Free from water and foreign matter; flash point, not less than 300° F.; distillate at 400° for 18 hours, less than 10 per cent; the flash point shall be taken in a New York State closed oil tester.

The distillate shall be made with about 50 grams of oil in a small glass retort, provided with a thermometer and placed in copper holder. The residue in the retort, after distilling, must be fluid at 75° F., and not coarsely crystalline on cooling.

Any other softening agents approved by the engineer commissioner may be used in place of petroleum oil.

(h) *Asphaltic cement.*—The asphaltic cement must be of refined asphalt, fluxed when necessary with petroleum residuum, asphaltic oil, refined maltha, or other approved flux. The cement must be practically free from water and must be within the range of 40 and 70 penetration when tested at 77° F. on Dow penetration machine with No. 2 needle, 100 grams, 5 seconds. The degree of penetration to be fixed by the engineer commissioner.

Preference will be given to an asphaltic cement that is not readily affected by the action of water, provided it is satisfactory in other respects. If an

asphaltic cement is accepted that is affected by water some provision satisfactory to the engineer commissioner must be made to guard against the results of such action, and such work must be included in the price bid. The use of an asphalt under these specifications shall be subject to the approval of the engineer commissioner, and if an asphalt has been proposed for use by the contractor and approved by the engineer commissioner no change in the asphalt to be used shall be made unless with the approval of the engineer commissioner. If an asphalt or flux is submitted for use which has not been successfully used for a period of at least two years for paving under conditions similar to those existing in the District of Columbia, its use may be limited to such extent as may be deemed advisable, or it may be rejected for use entirely in the discretion of the engineer commissioner.

The bitumen of the asphaltic cement must comply with the following tests:

(1) It must be of such consistency that when tested at 32° F. it will not show a hardness below 10 penetration, and when tested at 115° F. it will not be softer than 350 penetration.

(2) When a briquette of the bitumen having a minimum cross section of 1 square centimeter, having a penetration of 50° to 53° at 77° F. is tested for ductility at 77° F., the bitumen must stretch at the rate of 5 centimeters per minute to a distance of 20 centimeters before breaking.

(3) When the bitumen is heated in an open tin box, three-quarters inch deep by 2½ inches in diameter, at a temperature of 300° F. for 18 hours in a hot-air oven it must not show a loss by volatilization of over 5 per cent, and it must not have been hardened over 50 per cent by this heating.

The asphaltic cement must never be heated to a temperature that will injure it.

When the asphaltic cement contains over 5 per cent of material that will separate by subsidence while in a molten condition it must be thoroughly agitated before drawing from storage and while in use in the supply kettles so as to insure a uniform cement.

These properties shall be determined by tests made by uniform methods, descriptions of which are on file in the office of the engineer commissioner.

(i) *Asphaltic concrete paving mixture.*—The materials complying with the above specifications shall be mixed in proportions by volume depending upon their character and the traffic on the street, and upon the character of the asphalt, and will be determined by the engineer commissioner, but the percentage of bitumen in any mixture soluble in carbon bisulphide shall not exceed the limits 7 to 9 per cent. If the proportions of the mixture are varied in any manner from those specified, the mixture will be condemned, its use will not be permitted, and, if already placed on the streets, it must be removed and replaced by proper materials at the expense of the contractor.

(j) *Laying asphaltic concrete surface.*—The stone and paving cement shall be heated separately to a temperature of about 300°, and shall be thoroughly mixed while hot by the machinery. The proportion of paving cement shall be sufficient to thoroughly coat each particle of the aggregate, and the entire mixture shall be subject to the approval of the engineer. The mixture will be hauled while hot to the site of the work and shall be covered until deposited on the street. The temperature at the time of dumping shall not be less than 220°. The hot mixture shall be evenly spread with hot tools upon the base to such a thickness as will make a layer 2 inches in thickness after rolling. It shall then be rolled with a steam roller weighing not less than 1 ton per foot of tread of roller until no further compression occurs. After the rolling of the asphalt wearing surface has been completed there shall be spread over such surface a thin coating of asphalt cement as used in surface not to exceed on an average a quarter of a gallon to the square yard, of such consistency as shall be approved, which shall be thoroughly brushed into the wearing surface so as to fill all voids and smooth out any minor unevenness of the said surface. There shall then be spread over and rolled into this flush coat a thin layer of trap screenings, so far as practicable devoid of dust, in size from ⅜-inch down, whose use shall be to the end of securing a gritty, no-slippery surface. The finished surface shall be free from lumps or depressions and shall be true to the required cross section. The street to be barricaded, and so remain for such length of time as deemed necessary by the engineer.

11. *Asphaltic concrete on broken-stone base.*—A surface coat of asphaltic concrete complying in all respects to the specifications above for asphaltic concrete for concrete base is to be laid on a base of broken stone or gravel. The base will be furnished by the District of Columbia, in place and rolled, ready for

surfacing. The price bid will include supplying, mixing, placing, and rolling the asphalt surface.

12. *Additional work.*—The following specifications will cover incidental work which may be required of the contractor:

(a) *Setting 6 by 20 inch granite and bluestone curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 24 inches below the top of the curb when set, and 20 inches wide, will be excavated to receive the curb and its gravel bed; the dimensions of the trench, in width, will be 14 inches from the curb line toward the building line of the street, and 6 inches from said curb line toward the center line of the street. In the trench thus prepared the curb will be set, and brought to line and grade, with plumb face. Spalls of stone, hard-burned bricks, or other acceptable substance prepared for the purpose, will be used to adjust the curb to grade, and these spalls will be so placed and adjusted as to support the curbing permanently and afford a firm and stable support for it, without the use of small chips and fragments, used as "chimming" pieces, to wedge the stone in place. After the curb has been properly placed and adjusted to line and grade, the trench will be filled with gravel of approved quality to within 8 inches of the top of the curb, the filling to be done in layers of not more than 3 inches in depth and thoroughly compacted by suitable ramming. Close contact joints and even surfaces must be made and the lines and grades furnished strictly followed.

(b) *Setting 8 by 8 inch granite curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 15 inches below the top of the curb when set, and 18 inches wide, will be excavated to receive the concrete and the curb. The dimensions of the trench in width will be 14 inches from the curb line toward the building and 4 inches from the curb line toward the center of the street. In the trench thus prepared a bed of concrete, composed of 1 part of Portland cement, 4 parts of clean concrete sand, and 10 parts of screen pebbles, will be laid, filling the trench to a depth of 5 inches, the material to be mixed and laid under the same conditions as prescribed for laying cement concrete base for sheet asphalt pavements. On the base prepared and laid as above the curb will be placed before the concrete has set, and adjusted to line and grade by setting it to a firm, unyielding bearing in a bed of freshly made concrete by the use of heavy wooden mauls. The face of the curb must be plumb and true to line, and the top of it carefully set to grade with close and even contact joints. After the curb has been set to line and grade, the trench on the footwalk side will be immediately filled with concrete to within 5 inches of the top of the curb, which will be thoroughly rammed and compacted, after which it will immediately be covered with earth to prevent injury to it through too rapid evaporation, etc. In case vitrified-block gutters are to be laid in front of the curb, any portion of the concrete base of the curb that would interfere with the laying of such gutters must be removed immediately after the curb is set.

(c) *Resetting 6 by 20 inch granite and bluestone curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work. Under this classification, also, the curb may be adjusted to line and grade without removing it from its trench, if so ordered by the engineer.

(d) *Resetting 8 by 8 inch granite curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except that no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work, and no new concrete is required other than that sufficient to imbed the stone and back and adjust it to line and grade.

(e) *General instructions.*—All curb will be furnished to the contractor at the District property yard and will be hauled by him to the site of the work; any curbing unaccounted for, or improperly disposed of, or damaged or broken, through careless or unskilled handling, will be charged against him, and the value of the loss to the District will be deducted from any amount due the contractor for work done, as determined by the engineer.

All expenses connected with or incidental to the work of setting or resetting curb, as described above, including the hauling of the curbing, preparing the curb trenches, and the necessary grading connected therewith, furnishing gravel and spalls, furnishing and placing concrete, and all other material and labor necessary to execute the work in accordance with the specifications therefor,

are included in the fixed price for the respective items as hereinafter stated. The cost of dressing, jointing, or cutting the curb will be paid for additionally, but no other claim for additional compensation will be entertained. Should the adjoining brick footwalks be disturbed in order to set or reset the curb, the portion so disturbed shall be repaved, if required by the engineer, without cost to the District.

13. *Prices for additional work.*—Contractors must do such additional work incident to the construction of new pavements as may be ordered on each street by the engineer commissioner. All such work shall be in accordance with current District specifications. Prices paid for this work will be as stated below:

- (1) Removing old curb, including haul not to exceed 2 miles, 8 cents per linear foot.
- (2) Hauling same beyond distance of 2 miles, 1 cent per linear foot per mile.
- (3) Hauling from District property yard and setting 6 by 20 inch curb, 25 cents per linear foot.
- (4) Resetting 6 by 20 inch granite and bluestone curb, 25 cents per linear foot.
- (5) Hauling from District property yard and setting 8 by 8 inch curb, 35 cents per linear foot.
- (6) Resetting 8 by 8 inch curb on new concrete base, 31 cents per linear foot.
- (7) Resetting 8 by 8 inch curb on old concrete base, 15 cents per linear foot.
- (8) Dressing, jointing, and cutting curb, etc. (stonecutters' time), including setting-up labor, 65 cents per hour.
- (9) Removing old rubble, cobble, flagging stone and brick, vitrified brick or brick, etc., including haul not to exceed 2 miles, 15 cents per square yard.
- (10) Removing old asphalt blocks, including haul not to exceed 2 miles, 20 cents per square yard.
- (11) Removing old granite block, including haul not to exceed 2 miles, and removal of old paving bed and cleaning concrete base where same exists, 25 cents per square yard.
- (12) Overhaul on items 9, 10, and 11, 1 cent per square yard per quarter mile or fraction thereof.
- (13) Removing old granite block and loading same on wagons, without haul, 17 cents per square yard.
- (14) Removing old coal-tar or asphalt surface and binder from concrete base in connection with resurfacing work, including haul, 12 cents per square yard.
- (15) Grading and hauling earth, not to exceed 1,000 feet, 55 cents per cubic yard.
- (16) Grading and hauling macadam, not to exceed 1,000 feet, 55 cents per cubic yard.
- (17) Removing old coal-tar and bituminous pavement or base of the class laid since 1880 and hauling not to exceed 1,000 feet, \$1 per cubic yard.
- (18) Removing old coal-tar and bituminous pavement or base of the class laid prior to 1880 and hauling same not to exceed 1,000 feet, \$1.85 per cubic yard.
- (19) Removing old concrete base and hauling not to exceed 1,000 feet, \$1.50 per cubic yard.
- (20) Hauling excavated material, per 100 feet, over first 1,000 feet, 1 cent per cubic yard.
- (21) Laying or relaying vitrified brick or block on old concrete base, 60 cents per square yard.
- (22) Laying and relaying asphalt block and vitrified brick or block on gravel base, 40 cents per square yard.
- (23) Cleaning old vitrified brick or block for relaying, 25 cents per square yard.
- (24) Laying and relaying granite block, 75 cents per square yard.
- (25) Relaying cobble and rubble, 30 cents per square yard.
- (26) Repairing cement walks, \$1.50 per square yard.
- (27) Repairing brick walks, 25 cents per square yard.
- (28) Laying asphaltic or broken stone base in place, \$3 per cubic yard.
- (29) Laying Portland cement concrete base in place, \$5 per cubic yard.
- (30) Adjusting manhole tops and basin covers to grade, \$1.50 each.
- (31) Adjusting water valve casings to grade, \$3 each.
- (32) Adjusting electric light or telephone manhole tops to grade as follows:
 - (a) Size, 14 by 18 inches, \$1 each.
 - (b) Size, 36 by 36 inches, \$1.50 each.
 - (c) Size, 6 by 6 feet, \$4 each.

14. *Extra work.*—The contractor must be prepared to do any extra work that may be ordered in writing by the engineer, and for this he will be paid at cur-

rent rates for work of a similar character, or, if the extra work should be of a class for which no rate is fixed by current contracts, the actual reasonable cost to the contractor, as determined by the engineer, plus 15 per cent of said cost.

The contractor shall have no claim for compensation for extra work unless same is ordered in writing by the engineer. All additional and extra work shall conform to current District of Columbia specifications therefor.

15. *Guaranty.*—All work under this contract (except as herein stated) will be guaranteed and kept in repair by the contractor without cost to the District for a period of five years from date of its completion as indicated on the final voucher for each street. Ten per cent of the cost of this work will be retained and disposed of as provided for by law. No retent will be held on ordinary repairs (minor repairs), or on the cost of grading, the removal of old materials and of the overhaul on the same, and of stonecutting.

It is further expressly understood and agreed that if any of the pavements laid should, for any reason whatsoever, within the period of five years, prove inferior to the best laid in the District prior to July 1, 1904, then the contractor shall, on demand of the commissioners, remove such defective pavements and relay them with new material of approved quality. The engineer commissioner shall decide the question of inferiority.

On expiration of guarantee for maintenance the work is to be inspected, and all imperfections must be corrected where and to such extent as the engineer shall direct, upon which the engineer will accept the same in writing, and until such acceptance the guaranty shall be in force. Repairs that may become necessary during the guaranty period will be made by the contractor when ordered by the engineer commissioner.

16. *Retain fund.*—The retain fund shall be subject to the control of the Commissioners of the District of Columbia for the purpose of maintaining the work in repair and making good any defects discovered during the period specified. In the event of the contractor failing to make such necessary repairs after notice to do so the commissioners may cause such work to be done and deduct the cost of the same from the retain fund and, in their discretion, may require of the contractor and his sureties that any portion of the said retain fund which may have been expended for the maintenance of the work shall be made good by further deposit.

17. *Work in railroad space.*—Certificates of indebtedness against street railway companies will be given to the contractor, if necessary, for all work done and all material furnished by him for the space which must be paved and kept in repair by street railway companies in accordance with existing laws.

18. *Cuts.*—Contractors shall be responsible for any work done upon any street over plumbers' cuts or other work done by the permission of the commissioners before the work is begun.

19. *Modification.*—The commissioners reserve the right to modify these specifications as may from time to time seem desirable. The amount of compensation, if any, due the contractor for said modifications will be determined by the engineer commissioner on the same basis as in the case of extra work.

SPECIFICATIONS FOR LAYING ASPHALT-BLOCK PAVEMENTS.

1. *Work.*—The work to be done under this contract will consist of paving with asphalt block, on a 6-inch concrete base, such streets, avenues, and roads in the District of Columbia, or parts thereof, or doing any portion of such work, as may be ordered in writing by the Commissioners of the District of Columbia, under appropriations for the fiscal year ending June 30, 1915. The estimated amount is 9,000 square yards.

In scheduling the bids for the purpose of an award of contract there will be deducted from the total cost of doing the work as determined from the prices bid therefor and the quantities above stated, such sum as will represent the amount proposed by the bidder to be allowed to the District of Columbia and deducted from his contract prices for the use of Occoquan stone.

The estimated amount of stone so to be used for the purpose of scheduling the bids as above is 1,500 cubic yards.

2. *Bids.*—The contractor will, for the prices bid, do all the work prescribed in these specifications; do all the necessary grading and trimming of the road-bed and all rolling; provide bridges, fences, and other means of maintaining travel on intersecting streets, roads, and railroads, and all private driveways after giving due notice to parties affected thereby; maintain the same in good and safe condition as long as may be necessary, and then remove such

temporary expedients and restore such roads to their proper condition; provide watchmen, lights, fences, and other precautionary measures necessary to the protection of person and property; furnish all materials (except as specified), and all tools and implements, labor, and transportation required to lay and put in complete order for use the specified pavement; and do each and all of these to the satisfaction of the engineer. Upon the completion of the work he will remove any temporary structures erected during the progress of the work, and restore all fixtures, pavements, and parkings, both public and private, to satisfactory condition.

3. *Old material.*—Old material removed from the street will be the property of the District of Columbia, and the work of removal will be paid for at prices named in paragraph 9 of these specifications. Granite block, cobble, old curb, etc., must be removed to the nearest property yard or to such other places as the engineer may direct.

4. *Grading and subgrade.*—Lines and grades will be established by the engineer, and no work will be commenced until these are given. The area over which the pavement is to be laid must be excavated to the proper depth below the surface of the pavement when completed, any objectionable or unsuitable matter below the bed being removed to such depth as may be directed by the engineer and the space filled with suitable material thoroughly compacted. The bed, after being trimmed so as to be parallel to the surface of the pavement when completed, will be thoroughly compacted by rolling with a roller weighing not less than 5 tons and by heavy ramming at places which can not be reached by the roller, dampening the bed before rolling and ramming, if required, to the satisfaction of the engineer. No extra allowance will be made for trimming or rolling, but the volume of earth, etc., removed will be paid for as grading of its class. Any filling will be done in layers not exceeding 12 inches in thickness, and all materials used for this purpose will be subject to approval. If improper or unsuitable material be used, it will be removed at the cost of the contractor. All measurements will be made in place, and payments made thereon. Should the grading involve work in both "cut" and "fill," the measurement of it will be computed on the basis of the volume of the material in place in the "cut" only; the excavated material from the "cut" section deposited in the "fill" will not be again paid for as "fill." Should the amount of cut on the street not suffice to make the necessary fill, the amount borrowed from other designated localities will be paid for as grading.

5. *Concrete base.*—Upon the bed prepared as described in paragraph 4 there will be laid a 6-inch foundation of concrete as directed, made of the following materials by volume: 1 part Portland cement, 3 parts sand, 7 parts gravel. Broken stone, run of the crusher, may be substituted for part or all of the gravel at the option of the contractor.

(a) *Cement.*—The cement used will be a standard brand of Portland cement, uninjured by age or exposure, and delivered at the work in original undamaged packages. The right is reserved to reject any cement that has not established itself as a high-grade Portland cement and has not been made by the same mill for two years and given satisfaction in use for at least one year under climatic and other conditions of at least equal severity as those of the work proposed. The contractor shall keep the cement in store, under proper cover, in the city of Washington, and shall properly protect it until used. The engineer shall have the right to test the cement as he judges necessary and to reject any or all lots. The cement, after being accepted, can not be transferred or used by the contractor on other work without the consent of the engineer commissioner. No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to extend over such length of time as the engineer commissioner may think necessary. The cement while in storage or upon the work or while being hauled upon the work shall be properly protected, and no cement shall be used which, in the opinion of the engineer commissioner, has been injured by age or exposure. The cement shall be kept by the contractor in store, under proper cover, in the city of Washington, subject to inspection for at least 40 days after notifying the inspector of asphalt and cements before it can be used on the streets, if deemed advisable by the engineer commissioner. Should the contractor's work be delayed by his failure to keep himself supplied with the necessary amount of approved cement, the District shall have the right to furnish him with tested cement from the stock on hand at its warehouse and charge said contractor with the cost of same at the rate of \$1.50 per barrel of Portland cement for each and every barrel so furnished, and collect the amount due therefor from any moneys found to be due to said con-

tractor by the District. All cement sacks are to be returned by the contractor, and for those not returned or not in good condition a charge of 10 cents per sack will be made.

No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to extend over such length of time, not exceeding 28 days, as the engineer commissioner may think necessary; said tests to be conducted in accordance with the methods prescribed in circular 33 of the Bureau of Standards, United States Government specifications for Portland cement.

(b) *Sand*.—The sand used shall be clean, sharp, river or pit sand, containing both fine and coarse grains, but free from sewage, mud, clay, mica, paper, leaves, chips, or other foreign matter, and not showing, when shaken with water and after subsidence, more than 5 per cent, by volume, of silt.

(c) *Broken stone*.—Stone used in concrete must be hard, durable, and properly broken to a size small enough to pass through a ring 2 inches in diameter when the run of the crusher is substituted for gravel. The run of the crusher shall not contain over 1 per cent of material passing a No. 10 sieve. The stone shall be thoroughly cleansed from all foreign substance, and shall be screened and washed, if so ordered by the engineer. Sand, detritus, or any material other than hard, angular fragments of stone will be considered foreign substances.

(d) *Gravel*.—Gravel shall be clean, washed gravel, and shall not contain pebbles greater than 2 inches in their largest dimensions, and shall run from that down to pea size, well graduated.

(e) *Occoquan stone*.—At the option of the commissioners there may be used in place of any part of the stone or gravel above specified as a constituent of concrete base broken stone delivered from the quarries owned and operated by the District of Columbia at Occoquan, Va. The stone referred to will be issued to the contractor on the District wharf at Tenth and Water Streets SW., or on scows alongside the District wharf at the foot of Thirtieth Street W., or on scows alongside any wharf that the contractor may select where he may prefer to unload the material. The stone so furnished will be issued to the contractor on the basis of 2,500 pounds to the cubic yard, if issued by weight, and will be charged against him at a price therefor to be fixed by him as an item of his bid. This price, for deliveries at the District wharf at Tenth and Water Streets, is not to be less than 60 cents per cubic yard. The price for deliveries on scows at the foot of Thirtieth Street or at any other wharf selected by the contractor will be 15 cents per cubic yard less than the price bid for deliveries on the wharf at Tenth and Water Streets.

The use of Occoquan stone under the above arrangement may be required as to the whole or any part of the work covered by this contract. The stone proposed to be supplied will consist of a mixture about half and half of 2-inch and 1-inch stones, smaller fragments being excluded.

(f) *Water*.—Water used for mortar and concrete shall be fresh and clean, free from earth, dirt, or sewage, and shall be used in such quantity as the engineer shall direct.

(g) *Platforms*.—Platforms shall be provided upon which all sand, gravel, and broken stone for concrete shall be placed when brought upon the line of the work, and kept there until used.

(h) *Mixing*.—The thorough mixing and incorporation of all material will be insisted upon. If done by hand labor, the dry cement and sand shall be turned over and mixed with shovels by skilled workmen not less than six times before the water is added; the stone or gravel, after being drenched with water, shall be added to the mixed sand and cement; the drenching shall not be done while the stone or gravel is in the wheelbarrow; the whole mass shall be thoroughly turned over with shovels not less than four times and mixed upon a water-tight platform until every particle of stone or gravel is completely enveloped with mortar. The whole operation of mixing and laying each batch shall be performed as expeditiously as possible by the aid of machinery or a sufficient number of skilled men. If the concrete is mixed in batches requiring 1 barrel of cement, the platform must not be smaller than 10 by 12 feet, nor will a larger amount of concrete than can be made with 1 barrel of cement be allowed to be mixed in one batch by hand. In mixing by machinery the materials must be so delivered as to insure a uniform product of the specified proportions of all ingredients to the satisfaction of the engineer.

(i) *Setting*.—Concrete shall not be used after it has begun to show evidence of setting. No concrete which has once set shall be used as material for mixing a new batch.

Each batch of concrete after being mixed shall be spread in place in horizontal layers by means of shovels, so as to give the requisite thickness after being tamped, and shall then be thoroughly compacted. Any evidence of lack of compaction will be regarded as sufficient reasons for removal and replacement of the base. Hauling over base less than three days old must not be allowed unless planks are laid.

6. *Asphalt blocks.*—The size of the blocks will be 2 by 5 by 12 inches, and a variation of $\frac{1}{4}$ of an inch from these dimensions will be sufficient ground for rejecting any block.

All bids must be accompanied by a specimen block of the size and quality described in these specifications, labeled with the name of the bidder and locality of the factory. Bids not accompanied by specimen blocks will not be accepted. The blocks will be tested for specific gravity; all blocks furnished must be equal in quality to the sample, as determined by the engineer commissioner.

The blocks to be composed of asphalt, petroleum oil, asphalt cement, mineral dust, and crushed stone.

(a) *Asphalt.*—The asphalt shall be refined until homogeneous and free from water, and shall not at any time be heated to a temperature high enough to injure it. The refined product shall contain at least 50 per cent of bitumen soluble in carbon disulphide and 100 parts shall not require more than 35 parts of the flux to produce the asphalt cement described in paragraph 6c.

(b) *Petroleum oil.*—The oil used in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation without cracking until the oil has the following characteristics: Free from water and foreign matter; flash point not less than 300° F.; distillate at 400° F. for 18 hours less than 10 per cent; the flash point shall be taken in a New York State closed oil tester.

The distillate shall be made with about 50 grams of oil in a small glass retort provided with a thermometer and placed in a copper holder. The residue in the retort after distilling must be fluid at 75° and not coarsely crystalline on cooling.

Any other softening agents approved by the engineer commissioner may be used in place of petroleum oil.

(c) *Asphalt cement.*—The asphalt cement must be practically free from water and shall not at any time reach a temperature high enough to injure it.

If an asphalt is accepted that is readily affected by water, some provision satisfactory to the engineer commissioner must be made to guard against the results of such action, and such work must be included in the price bid.

The asphalt cement must comply with the following requirements and must in any case be subject to the approval of the engineer commissioner:

(1) For the purpose of testing the asphalt cement having a penetration of 20° to 23° at 77° F. on the Dow penetration machine with a No. 2 needle, 100 grams, 5 seconds, its composition shall be so regulated by the addition, if necessary, of standard fine mineral dust that it will contain 50 per cent of bitumen soluble in carbon bisulphide.

This cement shall be so tough at 32° F. that a prism 1 centimeter square by 8 centimeters long between supports will not break under impact at center with less than 15 centimeters drop of a 25 grammie weight striking a vertical plunger having a horizontal face of 1 centimeter by 1 millimeter resting on the asphalt prism.

(2) Degree of penetration of the asphalt cement to be fixed by the engineer commissioner.

(3) When the cement is heated in an open tin box $\frac{3}{4}$ inch deep by 2 $\frac{1}{2}$ inches in diameter at a temperature of 300° F. for 18 hours in a hot-air oven it must not show a loss by volatilization of over 5 per cent, and it must not have been hardened over 50 per cent by this heating.

The asphalt cement must never be heated to a temperature that will injure it. When the asphalt cement contains over 5 per cent of material that will separate by subsidence while in a molten condition it must be thoroughly agitated before drawing from storage and while in use in the supply kettles, so as to insure a uniform cement.

These properties shall be determined by tests made by uniform methods, descriptions of which are on file in the office of the engineer commissioner.

(d) *Mineral dust.*—This shall be any fine Portland cement or limestone dust, the whole of which shall pass a 30-mesh screen and at least 85 per cent pass a 100-mesh screen.

(e) *Crushed stone.*—The crushed stone in use shall be from any tough, hard rock, and shall not contain any appreciable amount of soft ingredients, such as mica, soft sandstone, or shale. On sifting not more than 3 per cent shall be retained on a 4-mesh-per-inch screen, at least 40 per cent must be retained on 20-mesh-per-inch screen, and at least 12 per cent must pass a 100-mesh-per-inch screen. If the stone does not contain the desired fine material, mineral dust can be added to make up the deficiency, and in any case at least 5 per cent of such mineral dust shall be used.

(f) *Manufacture.*—The materials complying with the above specifications shall be mixed in proportions by weight, depending upon their character, which will be determined by the engineer commissioner, but in any mixture the percentage of bitumen soluble in carbon bisulphide shall not exceed the limits, 6 to 9 per cent.

If the proportions of the mixture are varied in any manner from those prescribed the blocks will not be accepted.

The stone and dust and the asphaltic cement must be mixed while hot, and the mixture must be compressed into blocks by methods meeting with the approval of the engineer commissioner.

Samples of all material entering into the composition of the block shall be furnished when required, in suitable tin boxes and cans, to the inspector of asphalt and cements, who shall have access to all branches of the works at all times.

Blocks are to be manufactured with a total minimum compression of not less than 360,000 pounds per block, press pressure.

7. *Method of laying blocks on concrete base.*—The 2-inch blocks are to be laid on this concrete base in a paving bed of 1 part Portland cement and 4 parts sand, at least one-half inch thick, and as much thicker as may be necessary, due to inequalities in surface of concrete base, so that the blocks, when tamped in place, will be securely imbedded in this paving bed and wholly supported by it, and will present a uniform surface with close joints and proper grade and crown. The pavement will then be thoroughly grouted with a thin easily flowing grout of 1 part neat Portland cement and 1 part fine sand.

8. *Additional work.*—The following specifications will cover incidental work which may be required of the contractor:

(a) *Setting 6 by 20 inches granite and bluestone curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 24 inches below the top of the curb when set, and 20 inches wide, will be excavated to receive the curb and its gravel bed; the dimensions of the trench, in width, will be 14 inches from the curb line toward the building line of the street, and 6 inches from said curb line toward the center line of the street. In the trench thus prepared the curb will be set, and brought to line and grade, with plumb face. Spalls of stone, hard-burned brick, or other acceptable substance prepared for the purpose, will be used to adjust the curb to grade, and these spalls will be so placed and adjusted as to support the curbing permanently, and afford a firm and stable support for it, without the use of small chips and fragments, used as "shimming" pieces, to wedge the stone in place. After the curb has been properly placed and adjusted to line and grade, the trench will be filled with gravel of approved quality to within 8 inches of the top of the curb, the filling to be done in layers of not more than 3 inches in depth and thoroughly compacted by suitable ramming. Close contact joints and even surfaces must be made and the lines and grades furnished strictly followed.

(b) *Setting 8 by 8 inch granite curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 15 inches below the top of the curb when set and 18 inches wide, will be excavated to receive the concrete and the curb. The dimensions of the trench in width will be 14 inches from curb line toward the building and 4 inches from the curb line toward the center line of the street. In this trench thus prepared a bed of concrete, composed of 1 part of Portland cement, 4 parts of clean concrete sand, and 10 parts of screen pebbles, will be laid, filling the trench to a depth of 5 inches, the material to be mixed and laid under the same conditions as prescribed for laying cement concrete base for sheet-asphalt pavements. On the base prepared and laid as above the curb will be placed before the concrete has set, and adjusted to line and grade by setting it to a firm, unyielding bearing in a bed of freshly made concrete by the use of heavy wooden mauls. The face of the curb must be plumb and true to line and the top of it carefully set to grade with close and even contact joints. After the curb has been set to

line and grade the trench on the footwalk side will be immediately filled with concrete to within 5 inches of the top of the curb, which will be thoroughly rammed and compacted, after which it will immediately be covered with earth to prevent injury to it through too rapid evaporation, etc. In case vitrified block gutters are to be laid in front of the curb, any portion of the concrete base of the curb that would interfere with the laying of such gutters must be removed immediately after the curb is set.

(c) *Resetting 6 by 20 inch granite and bluestone curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work. Under this classification also the curb may be adjusted to line and grade without removing it from its trench, if so ordered by the engineer.

(d) *Resetting 8 by 8 inch granite curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except that no hauling of the curb is required other than that incidental to the necessary position of it upon the line of work, and no new concrete is required other than that sufficient to imbed the stone and back and adjust it to line and grade.

(e) *General instructions.*—All curb will be furnished to the contractor at the District property yard and will be hauled by him to the site of the work; any curbing unaccounted for or improperly disposed of, or damaged or broken through careless or unskilled handling, will be charged against him, and the value of the loss to the District will be deducted from any amount due the contractor for work done, as determined by the engineer.

All expenses connected with or incidental to the work of setting or resetting curb as described above, including the hauling of the curbing, preparing the curb trenches, and the necessary grading connected therewith, furnishing gravel and spalls, furnishing and placing concrete, and all other material and labor necessary to execute the work in accordance with the specifications therefor, are included in the fixed price for the respective items as hereinafter stated. The cost of dressing, jointing, or cutting the curb will be paid for additionally, but no other claim for additional compensation will be entertained. Should the adjoining brick footwalks be disturbed in order to set or reset the curb, the portion so disturbed shall be repaved, if required by the engineer, without cost to the District.

9. *Prices for additional work.*—Contractors must do such additional work incident to the construction of new pavements as may be ordered on each street by the engineer commissioner. All such work shall be in accordance with current District specifications. Prices paid for this work will be as stated below:

(1) Removing old curb, including haul not to exceed 2 miles, 8 cents per linear foot.

(2) Hauling same beyond distance of 2 miles, 1 cent per linear foot per mile.

(3) Hauling from District property yard and setting 6 by 20 inch curb, 25 cents per linear foot.

(4) Resetting 6 by 20 inch granite and bluestone curb, 25 cents per linear foot.

(5) Hauling from District property yard and setting 8 by 8 inch curb, 35 cents per linear foot.

(6) Resetting 8 by 8 inch curb on new concrete base, 31 cents per linear foot.

(7) Resetting 8 by 8 inch curb on old concrete base, 15 cents per linear foot.

(8) Dressing, jointing, and cutting curb, etc. (stonecutters' time) including setting-up labor, 65 cents per hour.

(9) Removing old rubble, cobble, flagging stone and brick, vitrified block or brick, etc., including haul not to exceed 2 miles, 15 cents per square yard.

(10) Removing old asphalt blocks, including haul not to exceed 2 miles, 20 cents per square yard.

(11) Removing old granite block, including haul not to exceed 2 miles, and removal of old paving bed and cleaning concrete base where same exists, 25 cents per square yard.

(12) Overhaul on items 9, 10, and 11, 1 cent per square yard per quarter mile or fraction thereof.

(13) Removing old coal-tar or asphalt surface and binder from concrete base in connection with resurfacing work, including haul, 12 cents per square yard.

(14) Grading and hauling earth, not to exceed 1,000 feet, 55 cents per cubic yard.

(15) Grading and hauling macadam, not to exceed 1,000 feet, 55 cents per cubic yard.

(16) Removing old coal-tar and bituminous pavement or base of the class laid since 1880 and hauling not to exceed 1,000 feet, \$1 per cubic yard.

(17) Removing old coal-tar and bituminous pavement or base of the class laid prior to 1880 and hauling same, not to exceed 1,000 feet, \$1.85 per cubic yard.

(18) Removing old concrete base and hauling, not to exceed 1,000 feet, \$1.50 per cubic yard.

(19) Hauling excavated material, per 100 feet, over first 1,000 feet, 1 cent per cubic yard.

(20) Laying new or old vitrified brick or block on new 6-inch concrete base, \$1.30 per square yard.

(21) Laying or relaying vitrified brick or block on old concrete base, 60 cents per square yard.

(22) Laying and relaying asphalt block and vitrified brick or block on gravel base, 40 cents per square yard.

(23) Cleaning old vitrified brick or block for relaying, 25 cents per square yard.

(24) Laying and relaying granite block, 75 cents per square yard.

(25) Relaying cobble and rubble, 30 cents per square yard.

(26) Repairing cement walks, \$1.50 per square yard.

(27) Repairing brick walks, 25 cents per square yard.

(28) Laying asphaltic or broken stone base in place, \$3 per cubic yard.

(29) Laying Portland cement concrete base in place, \$5 per cubic yard.

(30) Adjusting manhole tops and basin covers to grade, \$1.50 each.

(31) Adjusting water-valve casings to grade, \$3 each.

(32) Adjusting electric-light or telephone manhole tops to grade, as follows:

(a) Size, 14 by 18 inches, \$1 each.

(b) Size, 36 by 36 inches, \$1.50 each.

(c) Size, 6 by 6 feet, \$4 each.

10. *Extra work.*—The contractor must be prepared to do any extra work that may be ordered in writing by the engineer, and for this he will be paid at current rates for work of a similar character; or if the extra work should be of a class for which no rate is fixed by current contracts, the actual reasonable cost to the contractor, as determined by the engineer, plus 15 per cent of said cost.

The contractor shall have no claim for compensation for extra work unless same is ordered in writing by the engineer. All additional and extra work shall conform to current District of Columbia specifications therefor.

11. *Guaranty.*—All work under this contract (except as herein stated) will be guaranteed and kept in repair by the contractor without cost to the District for a period of five years from date of its completion, as indicated on the final voucher for each street. Ten per cent of the cost of this work will be retained and disposed of as provided for by law. No retent will be held on ordinary repairs (minor repairs) or on the cost of grading, the removal of old materials, and of the overhaul on the same, and of stone cutting.

It is further expressly understood and agreed that if any of the pavements laid should, for any reason whatsoever, within the period of five years, prove inferior to the best laid in the District prior to July 1, 1904, then the contractor shall, on demand of the commissioners, remove such defective pavements and relay them with new material of approved quality. The engineer commissioner shall decide the question of inferiority.

On expiration of guaranty for maintenance the work is to be inspected, and all imperfections must be corrected where and to such extent as the engineer shall direct, upon which the engineer will accept the same in writing, and until such acceptance the guaranty shall be in force. Repairs that may become necessary during the guaranty period will be made by the contractor when ordered by the engineer commissioner.

12. *Retain fund.*—The retain fund shall be subject to the control of the Commissioners of the District of Columbia for the purpose of maintaining the work in repair and making good any defects discovered during the period specified. In the event of the contractor failing to make such necessary repairs after notice to do so the commissioners may cause such work to be done and deduct the cost of the same from the retain fund, and, in their discretion, may require of the contractor and his sureties that any portion of the said retain fund which may have been expended for the maintenance of the work shall be made good by further deposit.

13. *Work in railroad space.*—Certification of indebtedness against street railway companies will be given to the contractor if necessary for all work done

and all material furnished by him for the space which must be paved and kept in repair by street railway companies in accordance with existing laws.

14. *Cuts.*—Contractors shall be responsible for any work done upon any street over plumbers' cuts or other work done by the permission of the commissioners before the work is begun.

15. *Modification.*—The commissioners reserve the right to modify these specifications as may from time to time seem desirable. The amount of compensation, if any, due the contractor for said modifications will be determined by the engineer commissioner on the same basis as in the case of extra work.

SPECIFICATIONS FOR RESURFACING AND REPAIRING ASPHALT AND COAL-TAR PAVEMENTS.

1. *Work.*—The work to be done under this proposal and contract includes the renewal or resurfacing of such asphalt and coal-tar pavements as may be ordered from time to time by the Commissioners of the District of Columbia, including the repairs of sidewalks and other pavements disturbed in doing said work, or changed to conform to new grades if so ordered by the engineer.

The renewal of the surface of cuts made in such pavements for tapping sewers and pipes and for other purposes, and generally all patching and miscellaneous work necessary to keep the above-mentioned pavements in good condition for travel, may be included in the work ordered to be done under this contract should the prices bid under items 4 and 5 of the proposal be more economical than the cost for which such work can be done by means of the portable asphalt plant belonging to the District of Columbia. This plant is authorized by law to be used by the commissioners for certain purposes, including the above, so long as the costs of operation shall be less than the costs of similar work under contract. The right of the commissioners to require the contractor under the above conditions to do the work enumerated will not be exercised, except with the contractor's assent, for a period of less than six months or more of continuous performance of such work.

2. *Amount of work.*—The amount of work is dependent upon the annual appropriation for "Repairs to streets," which was \$365,000 for the fiscal year ending June 30, 1914, and is expected to be \$339,185 for the fiscal year ending June 30, 1915, these figures being contained in the appropriation bill pending and now in conference.

For the purpose of canvassing bids the following approximate estimate of the amount of work to be done during each fiscal year of this contract will be used (standard asphalt surface and binder for repairs and miscellaneous work and material for street railway repairs not estimated, and will not be considered in the canvass of bids):

Standard asphalt pavement on 6-inch concrete base.....	square yards..	25,000
Standard asphalt surface (2½ inches before compression).....	do.....	25,000
Asphalt binder, cubic-foot measurement, in connection with resurfacing.....	do.....	50,000
Asphaltic concrete, on 6-inch concrete base.....	square yards..	15,000
Asphaltic concrete surface, 2 inches thick after compression.....	do.....	5,000
Asphaltic concrete in connection with resurfacing work.....	cubic feet..	1,000

3. *Bids.*—The contractor will, for the prices bid, do all the work prescribed in these specifications; do all the necessary grading and trimming of the roadbed and all rolling; provide bridges, fences, and other means of maintaining travel on intersecting streets, roads, and railroads, and all private driveways after giving due notice to parties affected thereby; maintain the same in good and safe condition as long as may be necessary, and then remove such temporary expedients and restore such roads to their proper condition; provide watchmen, lights, fences, and other precautionary measures necessary to the protection of persons and property; furnish all material (except as specified) and all tools and implements, labor, and transportation required to lay and put in complete order for use the specified pavement; and do each and all of these to the satisfaction of the engineer. Upon the completion of the work he will remove any temporary structures erected during the progress of the work and restore all fixtures, pavements, and parkings, both public and private, to satisfactory condition.

4. *Old material.*—The amount of old material to be cut and removed each day shall be decided by the engineer commissioner or his agents. Should the contractor remove more than ordered, he must replace it with new material

without cost to the District. No payment will be made for any coal tar or asphalt surface removed in making repairs, and the material thus removed will become the property of the contractor, to be disposed of by him. Any coal tar or asphalt surface and binder removed from concrete base in resurfacing work will be paid for at the price named in paragraph 16 of the specifications, and such material will become the property of the contractor and be disposed of by him unless the engineer commissioner should elect to retain title to any of this material, in which event the contractor will for the price named deliver the same to a distance not to exceed 2 miles from the site of the work. Where the old pavement, base, and surface is removed for the purpose of laying a new pavement the material will be the property of the District, and the work will be paid for at the prices named in paragraph 16 of the specifications. Granite blocks, cobble, old curb, etc., must be removed to the nearest property yard or to such place within the section of the city being repaired as the engineer commissioner may direct.

ASPHALT PAVEMENTS.

5. Grading and subgrade.—The area over which the pavement is to be laid must be excavated to the proper depth below the surface of the pavement when completed, any objectionable or unsuitable matter below the bed being removed to such depth as may be directed by the engineer and the space filled with suitable material thoroughly compacted. The bed, after being trimmed so as to be parallel to the surface of the pavement when completed, will be thoroughly compacted by rolling with a roller weighing not less than 5 tons and by heavy ramming at places which can not be reached by the roller, dampening the bed before rolling and ramming, if required, to the satisfaction of the engineer. No extra allowance will be made for trimming or rolling, but the volume of earth, etc., removed will be paid for as grading of its class.

6. Concrete base.—Upon the bed thus prepared there will be laid a 6-inch foundation of concrete as directed, made of the following materials by volume: 1 part Portland cement, 3 parts sand, 7 parts gravel; broken stone, run of the crusher, may be substituted for part or all of the gravel, at the option of the contractor.

(a) Cement.—The cement used will be a standard brand of Portland cement, uninjured by age or exposure, and delivered at the work in original undamaged packages. The right is reserved to reject any cement that has not established itself as a high-grade Portland cement and has not been made by the same mill for two years and given satisfaction in use for at least one year under climatic and other conditions of at least equal severity as those of the work proposed. The contractor shall keep the cement in store, under proper cover, in the city of Washington, and shall properly protect it until used. The engineer shall have the right to test the cement as he judges necessary and to reject any or all lots. The cement, after being accepted, can not be transferred or used by the contractor on other work without the consent of the engineer commissioner. No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to extend over such length of time as the engineer commissioner may think necessary. The cement while in storage or upon the work, or while being hauled upon the work, shall be properly protected, and no cement shall be used which, in the opinion of the engineer commissioner, has been injured by age or exposure. The cement shall be kept by the contractor in store, under proper cover, in the city of Washington, subject to inspection for at least 40 days after notifying the inspector of asphalt and cements, before it can be used on the streets, if deemed advisable by the engineer commissioner. Should the contractor's work be delayed by his failure to keep himself supplied with the necessary amount of approved cement, the District shall have the right to furnish him with tested cement from the stock on hand at its warehouse and charge said contractor with the cost of same at the rate of \$1.50 per barrel of Portland cement for each and every barrel so furnished and collect the amount due therefor from any moneys found to be due to said contractor by the District. All cement sacks are to be returned by the contractor, and for those not returned or not in good condition a charge of 10 cents per sack will be made.

No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to extend over such length of time not exceeding 28 days as the engineer commissioner may

think necessary; said tests to be conducted in accordance with the methods prescribed in circular 33 of the Bureau of Standards, United States Government specifications for Portland cement.

(b) *Sand*.—The sand used shall be clean, sharp river or pit sand, containing both fine and coarse grains, but free from sewage, mud, clay, mica, paper, leaves, chips, or other foreign matter, and not showing when shaken with water and after subsidence more than 5 per cent, by volume, of silt.

(c) *Broken stone*.—Stone used in concrete must be hard, durable, and properly broken to a size small enough to pass through a ring 2 inches in diameter when the run of the crusher is substituted for gravel. The run of the crusher shall not contain over 1 per cent of material passing a No. 10 sieve. The stone shall be thoroughly cleansed from all foreign substance, and shall be screened and washed, if so ordered by the engineer. Sand, detritus, or any material other than hard, angular fragments of stone will be considered foreign substances.

(d) *Gravel*.—Gravel shall be clean, washed gravel, and shall not contain pebbles greater than 2 inches in their largest dimensions, and shall run from that down to pea size, well graduated.

(e) *Water*.—Water used for mortar and concrete shall be fresh and clean, free from earth, dirt, or sewage, and shall be used in such quantity as the engineer may direct.

(f) *Platforms*.—Platforms shall be provided upon which all sand, gravel, and broken stone for concrete shall be placed when brought upon the line of the work, and kept there until used.

(g) *Mixing*.—The thorough mixing and incorporation of all materials will be insisted upon. If done by hand labor, the dry cement and sand shall be turned over and mixed with shovels by skilled workmen not less than six times before water is added; the stone or gravel, after being drenched with water, shall be added to the mixed sand and cement; the drenching shall not be done while the stone or gravel is in the wheelbarrow; the whole mass shall be thoroughly turned over with shovels, not less than four times, and mixed upon a water-tight platform until every particle of stone or gravel is completely enveloped with mortar. The whole operation of mixing and laying each batch shall be performed as expeditiously as possible, by the aid of machinery or a sufficient number of skilled men. If the concrete is mixed in batches requiring one barrel of cement, the platform must not be smaller than 10 by 12 feet, nor will a larger amount of concrete than can be made with one barrel of cement be allowed to be mixed in one batch by hand. In mixing by machinery the materials must be so delivered as to insure a uniform product of the specified proportions of all ingredients to the satisfaction of the engineer.

(h) *Setting*.—Concrete shall not be used after it has begun to show evidence of setting. No concrete which has once set shall be used as material for mixing a new batch.

Each batch of concrete after being mixed shall be spread in place in horizontal layers, by means of shovels, so as to give the requisite thickness after being tamped, and shall then be thoroughly compacted. Any evidence of lack of compaction will be regarded as sufficient reasons for removal and replacement of the base. Hauling over base less than three days old must not be allowed unless planks are laid.

7. *Asphalt binder*.—The binder course shall be composed of clean, broken stone, equal in quality to the stone for the base, and passing an inch and a quarter screen. Eighty-five per cent of this shall pass said screen in its longest dimensions, and of the remaining 15 per cent no piece shall have a larger dimension than $1\frac{1}{2}$ inches, and the stone, after passing the heating drums, shall not contain less than 5 nor more than 15 per cent of material passing a No. 10 screen.

The stone will be heated not higher than 350° F., in suitable appliances. It is then to be thoroughly mixed by machinery with asphalt cement, such as is acceptable for surface cement, penetration 60 to 90, at such temperature and in such proportions that the resulting binder will have life and gloss without an excess of cement. Should it appear dull from overheating or lack of cement, it will be rejected. While hot it will be hauled upon the work, spread upon the base so that when compacted it will be at least $1\frac{1}{2}$ inches in thickness, and immediately rammed and rolled until it is cold. Should the resulting course now show a proper bond, it must be immediately removed and replaced by and at the expense of the contractor. Binder and top shall not be taken from the yard

to the site of the work when weather conditions are, in the judgment of the engineer, unsuitable for the work of laying the pavement.

The contractor shall not enter upon a concrete base in order to lay the binder course until it has obtained sufficient strength for such a purpose, and during the period between laying the base and binder he shall properly protect it, and, when ordered by the engineer, shall sprinkle it in warm weather between the hours of sunset and sunrise as often as may be deemed necessary and in cold weather cover it with a material suitable for its protection.

8. *Asphalt wearing surface.*—The wearing surface of the pavement shall be composed of asphalt, petroleum oil, asphalt cement, clean, sharp-grained sand, and fine absorbent mineral dust.

(a) *Asphalt.*—The asphalt shall be refined until homogeneous and free from water and shall not at any time be heated to a temperature high enough to injure it. The refined product shall contain at least 90 per cent of bitumen soluble in carbon bisulphide, and 100 parts shall not require more than 30 parts of the flux to produce the asphalt cement described in paragraph 8-c.

(b) *Petroleum oil.*—The oil in use in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation without cracking until the oil has the following characteristics: Free from water and foreign matter; flash point, not less than 300° F.; distillate at 400° for 18 hours, less than 10 per cent; the flash point shall be taken in a New York State closed oil tester.

The distillate shall be made with about 50 grams of oil in a small glass retort, provided with a thermometer, and placed in a copper holder. The residue in the retort, after distilling, must be fluid at 75° F., and not coarsely crystalline on cooling.

Any other softening agents approved by the engineer commissioner may be used in place of petroleum oil.

(c) *Asphalt cement.*—The asphalt cement must be of refined asphalt, fluxed when necessary with petroleum residuum, asphaltic oil, refined maltha, or other approved flux. The cement must be practically free from water and must be within the range of 40 and 70 penetration when tested at 77° F. on Dow penetration machine with No. 2 needle, 100 grams, 5 seconds. The degree of penetration to be fixed by the engineer commissioner.

Preference will be given to an asphalt cement that is not readily affected by the action of water, provided it is satisfactory in other respects. If an asphalt cement is accepted that is affected by water, some provision satisfactory to the engineer commissioner must be made to guard against the results of such action, and such work must be included in the price bid. The use of an asphalt under these specifications shall be subject to the approval of the engineer commissioner, and if an asphalt has been proposed for use by the contractor and approved by the engineer commissioner no change in the asphalt to be used shall be made unless with the approval of the engineer commissioner. If an asphalt or flux is submitted for use which has not been successfully used for a period of at least two years for paving under conditions similar to those existing in the District of Columbia, its use may be limited to such extent as may be deemed advisable, or it may be rejected for use entirely, in the discretion of the engineer commissioner.

The bitumen of the asphalt cement must comply with the following tests:

(1) It must be of such consistency that when tested at 32° F. it will not show a hardness below 10 penetration, and when tested at 115° F. it will not be softer than 350 penetration.

(2) When a briquette of the bitumen having a minimum cross section of 1 square centimeter, having a penetration of 50° to 53° at 77° F., is tested for ductility at 77° F., the bitumen must stretch at the rate of 5 centimeters per minute to a distance of 20 centimeters before breaking.

(3) When the bitumen is heated in an open tin box $\frac{3}{4}$ inch deep by 2 $\frac{1}{4}$ inches in diameter at a temperature of 300° F. for 18 hours in a hot-air oven it must not show a loss by volatilization of over 5 per cent, and it must not have been hardened over 50 per cent by this heating.

The asphalt cement must never be heated to a temperature that will injure it.

When the asphalt cement contains over 5 per cent of material that will separate by subsidence while in a molten condition it must be thoroughly agitated before drawing from storage and while in use in the supply kettles so as to insure a uniform cement.

These properties shall be determined by tests made by uniform methods, descriptions of which are on file in the office of the engineer commissioner.

(d) *Sand*.—The sand in use shall be free from mud, hard grained, and moderately sharp. On sifting, it should have at least 15 per cent of material that would be caught on a 40-mesh per inch screen, 25 per cent of material that will pass an 80-mesh to the inch screen, and 10 per cent, at least, must pass a 100-mesh to the inch screen. If the sand to be used does not contain the desired fine material, mineral dust can be added to make up the deficiency, and in any case at least 5 per cent of such mineral dust shall be used. The amount of fine material may be increased at the discretion of the engineer commissioner.

(e) *Mineral dust*.—This shall be any fine Portland cement or limestone dust, the whole of which shall pass a 30-mesh screen, and at least 85 per cent pass a 100-mesh screen.

(f) *Asphalt paving mixture*.—The materials complying with the above specifications shall be mixed in proportion by weight, depending upon their character and the traffic on the street and upon the character of the asphalt, and will be determined by the engineer commissioner; but the percentage of bitumen in any mixture soluble in carbon bisulphide shall not exceed the limits, 9 to 13 per cent. If the proportions of the mixture are varied in any manner from those specified the mixture will be condemned, its use will not be permitted, and, if already placed on the streets, it must be removed and replaced by proper materials at the expense of the contractor.

The sand or the mixture of sand and stone dust and the asphalt cement will be heated separately to about 300° F. The dust, if limestone, will be mixed while cold with the hot sand in the required proportions and then mixed with the asphalt cement at the required temperature and in the proper proportion in a suitable apparatus, so as to effect a thoroughly homogeneous mixture. Sand boxes and asphalt gauges will be weighed in the presence of inspectors as often as may be desired.

Samples of all material entering into the composition of the pavement shall be supplied to the inspector of asphalt and cements when required in suitable tin boxes and cans; he shall have access to all branches of the works at any time, and shall have the right to obtain samples of all materials from the source of supply.

(g) *Laying asphalt surface*.—The pavement mixture prepared in a manner thus indicated will be brought to the ground in carts or wagons at a temperature of not less than 250° or more than 350° F.; the contractor must provide canvas covers for use in transit. It will then be shoveled into place and thoroughly spread to a thickness of at least 2½ inches by means of hot iron rakes, in such a manner as to give uniform and regular grade, so that after having received its ultimate compression it will have a net thickness of at least 1½ inches. This depth will be constantly tested by means of gauges furnished by the engineer commissioner. The surface will then be compressed by steam rollers, after which a small amount of hydraulic cement will be swept over it and it will then be thoroughly compressed by a steam roller weighing not less than 175 pounds to the inch run, the rolling being continued for not less than five hours for every 1,000 yards of surface, the street to be barricaded. Binder or topping shall not be laid when weather conditions are in the judgment of the engineer unsuitable for the work of laying the pavement. Barricades to remain for such length of time as deemed necessary by the engineer commissioner.

9. *Asphaltic base*.—Asphaltic base will be composed of clean, broken stone, free from spalls, that will pass through a 2-inch ring, well rammed, and rolled with a steam roller weighing not less than 5 tons. The rolling will be continued until the stone ceases to creep before the roller and it is evident that the final compression has been reached. It will then be thoroughly coated with asphaltic paving cement of approved quality, as directed.

10. *Asphaltic concrete on concrete base*.—(a) *Concrete base*.—The base is to conform in all respects to the specifications herein in relation to concrete base for sheet asphalt pavements. (See paragraph 6.)

(b) *Paving materials*.—The paving materials shall be composed of crushed trap-rock screenings, concrete sand, and mineral dust in the following proportions. Trap-rock screenings, 2 parts; concrete sand, 1 part; and mineral dust, at least 5 per cent of the above aggregate; mixed with asphalt cement. The various constituents of the mineral aggregate and asphalt cement shall be of the same kind and conform to District specifications for such materials for the year ending June 30, 1913, as follows:

(c) *Trap rock*.—The trap rock shall be of a quality to be approved by the engineer and shall be equal to that used by the District of Columbia for mac-

adam roadways. The crushed stone will vary in size from 1 inch to screenings and shall be devoid of dust.

(d) *Sand*.—The sand shall be hard grained and moderately sharp. On shifting it should have at least 25 per cent of material that would be caught on a 20-mesh per inch screen and 5 per cent of material that will pass an 80-mesh to the inch screen. If the sand to be used does not contain the desired fine material, mineral dust can be added to make up the deficiency, and in any case at least 5 per cent of such mineral dust shall be used.

(e) *Mineral dust*.—This shall be any fine Portland cement or limestone dust, the whole of which shall pass a 30-mesh screen, and at least 85 per cent pass a 100-mesh screen.

(f) *Asphalt*.—The asphalt shall be refined until homogeneous and free from water and shall not at any time be heated to a temperature high enough to injure it. The refined product shall contain at least 90 per cent of bitumen soluble in carbon bisulphide and 100 parts shall not require more than 30 parts of the flux to produce the asphalt cement described in paragraph 10-*h*.

(g) *Petroleum oil*.—The oil in use in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation without cracking, until the oil has the following characteristics: Free from water and foreign matter; flash point, not less than 300° F.; distillate at 400° for 18 hours, less than 10 per cent; the flash point shall be taken in a New York State closed oil tester.

The distillate shall be made with about 50 grams of oil in a small glass retort, provided with a thermometer and placed in copper holder. The residue in the retort, after distilling, must be fluid at 75° F. and not coarsely crystalline on cooling.

Any other softening agents approved by the engineer commissioner may be used in place of petroleum oil.

(h) *Asphaltic cement*.—The asphalt cement must be of refined asphalt, fluxed when necessary with petroleum residuum, asphaltic oil, refined maltha, or other approved flux. The cement must be practically free from water and must be within the range of 40 and 70 penetration when tested at 77° F. on Dow penetration machine with No. 2 needle, 100 grams, 5 seconds. The degree of penetration to be fixed by the engineer commissioner.

Preference will be given to an asphalt cement that is not readily affected by the action of water, provided it is satisfactory in other respects. If an asphalt cement is accepted that is affected by water, some provision satisfactory to the engineer commissioner must be made to guard against the results of such action, and such work must be included in the price bid. The use of an asphalt under these specifications shall be subject to the approval of the engineer commissioner, and if an asphalt has been proposed for use by the contractor and approved by the engineer commissioner no change in the asphalt to be used shall be made unless with the approval of the engineer commissioner. If an asphalt or flux is submitted for use which has not been successfully used for a period of at least two years for paving under conditions similar to those existing in the District of Columbia, its use may be limited to such extent as may be deemed advisable, or it may be rejected for use entirely, in the discretion of the engineer commissioner.

The bitumen of the asphalt cement must comply with the following tests:

(1) It must be of such consistency that when tested at 32° F. it will not show a hardness below 10 penetration, and when tested at 115° F. it will not be softer than 350 penetration.

(2) When a briquette of the bitumen having a minimum cross section of 1 square centimeter, having a penetration of 50° to 53° at 77° F., is tested for ductility at 77° F., the bitumen must stretch at the rate of 5 centimeters per minute to a distance of 20 centimeters before breaking.

(3) When the bitumen is heated in an open tin box three-fourths inch deep by 2½ inches in diameter at a temperature of 300° F. for 18 hours in a hot-air oven, it must not show a loss by volatilization of over 5 per cent and it must not have been hardened over 50 per cent by this heating.

The asphalt cement must never be heated to a temperature that will injure it.

When the asphalt cement contains over 5 per cent of material that will separate by subsidence while in a molten condition, it must be thoroughly agitated before drawing from storage and while in use in the supply kettles, so as to insure a uniform cement.

These properties shall be determined by tests made by uniform methods, descriptions of which are on file in the office of the engineer commissioner.

(i) *Asphaltic concrete paving mixture.*—The materials complying with the above specifications shall be mixed in proportions by volume depending upon their character and the traffic on the street, and upon the character of the asphalt, and will be determined by the engineer commissioner, but the percentage of bitumen in any mixture soluble in carbon bisulphide shall not exceed the limits, 7 to 9 per cent. If the proportions of the mixture are varied in any manner from those specified, the mixture will be condemned, its use will not be permitted, and, if already placed on the streets, it must be removed and replaced by proper materials at the expense of the contractor.

(j) *Laying asphaltic concrete surface.*—The stone and paving cement shall be heated separately to a temperature of about 300°, and shall be thoroughly mixed while hot by machinery. The proportion of paving cement shall be sufficient to thoroughly coat each particle of the aggregate, and the entire mixture shall be subject to the approval of the engineer. The mixture will be hauled while hot to the site of the work and shall be covered until deposited on the street. The temperature at the time of dumping shall not be less than 220°. The hot mixture shall be evenly spread with hot tools upon the base to such a thickness as will make a layer 2 inches in thickness after rolling. It shall then be rolled with a steam roller weighing not less than 1 ton per foot of tread of roller until no further compression occurs. After the rolling of the asphaltic-concrete wearing surface has been completed, there shall be spread over such surface a thin coating of asphaltic cement as used in surface not to exceed on an average a quarter of a gallon to the square yard, of such consistency as shall be approved, which shall be thoroughly brushed into the wearing surface, so as to fill all voids and smooth out any minor unevenness of the said surface. There shall then be spread over and rolled into this flush coat a thin layer of trap screenings, so far as practicable, devoid of dust, in size from three-eighths inch down, whose use shall be to the end of securing a gritty, no-slippery surface. The finished surface shall be free from lumps or depressions and shall be true to the required cross section. The street to be barricaded. Barricades to remain for such length of time as deemed necessary by the engineer commissioner.

11. *Asphaltic concrete on broken-stone base.*—A surface coat of asphaltic concrete complying in all respects to the specifications for asphaltic concrete on concrete base is to be laid on a base of broken stone or gravel. The base will be furnished by the District of Columbia, in place and rolled, ready for surfacing. The price bid will include supplying, mixing, placing, and rolling the asphaltic-concrete surface.

12. *Resurfacing over asphalt and coal-tar pavements.*—The foregoing specifications shall also apply, as far as practicable, to all work of resurfacing. Where the binder coat can not be made of uniform thickness, it will be paid for by the cubic foot.

13. *Ordinary repairs.*—Should the commissioners exercise their right under paragraph 1 of these specifications to require minor repairs and miscellaneous work to be done by this contractor, the same will include the repairing of all asphalt and coal-tar pavements where defective, due to wear or accident; the repairs of all cuts such as those made for tapping sewers, water pipes, etc.; and generally all patching and miscellaneous work necessary to keep the pavements in good condition for travel during the contract period.

(a) The repairs shall be made at such times and places and in such manner as may be directed and when deemed necessary on certain streets between the hours of 8 p. m. and 8 a. m. All old material shall be cut out and removed at the contractor's expense, and in the case of undercuts any overhanging portion shall be removed.

(b) Except in special cases, the base of the pavement over all cuts will be laid by the District and the surface and binder only by the contractor. The engineer commissioner may, however, call upon the contractor to lay the base wherever he may deem it advisable.

(c) The holes cut out shall be cleaned and the edges painted with hot paving cement, of such quality as may be acceptable to the engineer commissioner.

(d) Barricades of a suitable form to prevent traffic over recently laid work shall be provided and kept in place until the surface has hardened sufficiently to withstand pressure. These barricades and their use must be subject to the approval of the engineer commissioner.

(e) Work in repairing over plumber, electric light, and similar cuts will be done immediately on receipt of written order from the engineer commissioner.

(f) Any work of repairs to pavement for which street railway companies are responsible, and which may be ordered under this contract by the proper au-

thority, shall conform to these specifications and be paid for at the prices named in items 6 and 7 of the contract prices herein. In case any railway company shall fail or refuse to pay the sum due from said company in respect of work done by or under the orders of the proper officials of the District of Columbia, certificate of indebtedness against said railway company will be issued to the contractor for all work done and all materials furnished by him for the space which must be paved and kept in repair at the expense of said company in accordance with existing laws.

14. *Measurement.*—Asphalt top and asphalt binder specified herein to be paid for by the cubic foot shall be measured on the basis of the box or measure used at the plant for measuring the sand in the case of top mixture and the stone in the case of binder mixture. In the case of asphalt top mixture the actual net contents of the box as filled with sand will determine the amount of resultant top mixture to be paid for, and in the case of binder stone 92 per cent of the actual net contents of the box as filled with binder stone will determine the amount of resultant binder to be paid for, and payments on these bases will be made.

15. *Additional work.*—The following specifications will cover incidental work which may be required of the contractor in connection with the work of renewal, resurfacing, and repairs:

(a) *Laying vitrified block.*—Vitrified-block gutters will ordinarily be 18 inches wide, laid on a concrete base 6 inches in depth, of the same material and proportions and laid in the same manner as prescribed in these specifications for the concrete base under asphalt pavements.

As soon as practicable after the concrete base has been laid, a dry mixture, composed of 4 parts of the sand specified in paragraph 6-b and 1 part of Portland cement, thoroughly mixed, will be spread thereon, as a bed for the paving blocks, to the depth of not less than one-half inch, and regulated so as to be exactly parallel to the finished grade of the gutter.

On the bed thus prepared for them the blocks will be set on edge, with the longest dimensions at right angles to the curb, or as directed by the engineer.

The longitudinal joints of each course of blocks laid must be broken by a lap of not less than 4 inches.

The blocks will then be carefully rammed by placing a plank over several courses and ramming the plank with a heavy rammer. The ramming will be continued until the blocks reach a firm, unyielding bed and present a uniform surface, with proper grade. Any lack of uniformity in the surface or defect in the grade must be corrected by taking up and relaying the blocks.

After proper ramming the entire gutter will be thoroughly grouted with a thin, easily flowing grout of neat Portland cement.

A similar construction of block to that described for the gutters may be used adjacent to railroad tracks; the base will, in that case, extend to the bottom of the crossties, or at least 6 inches thick.

The blocks will be furnished the contractor at the District property yards and must be hauled to the work at his expense.

(b) *Setting 6 by 20 inch granite and bluestone curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 24 inches below the top of the curb when set, and 20 inches wide, will be excavated to receive the curb and its gravel bed; the dimensions of the trench in width will be 14 inches from the curb line toward the building line of the street and 6 inches from said curb line toward the center line of the street. In the trench thus prepared the curb will be set and brought to line and grade with plumb face. Spalls of stone, hard-burned brick, or other acceptable substance, prepared for the purpose, will be used to adjust the curb to grade, and these spalls will be so placed and adjusted as to support the curbing permanently, and afford a firm and stable support for it, without the use of small chips and fragments, used as "shimming" pieces, to wedge the stone in place. After the curb has been properly placed and adjusted to line and grade, the trench will be filled with gravel of approved quality, to within 8 inches of the top of the curb, the filling to be done in layers of not more than 3 inches in depth and thoroughly compacted by suitable ramming. Close contact joints and even surfaces must be made and the lines and grades furnished strictly followed.

(c) *Setting 8 by 8 inch granite curb.*—This curb will be set in the following manner: A trench parallel to the curb line, having a depth of 15 inches below the top of the curb when set, and 18 inches wide, will be excavated to receive the concrete and the curb. The dimensions of the trench in width will be 14

inches from the curb line toward the building and 4 inches from the curb line toward the center line of the street. In the trench thus prepared a bed of concrete, composed of 1 part of Portland cement, 4 parts of clean concrete sand, and 10 parts of screened pebbles, will be laid, filling the trench to a depth of 5 inches, the material to be mixed and laid under the same conditions as prescribed for laying cement concrete base for sheet asphalt pavements. On the base prepared and laid as above, the curb will be placed before the concrete has set and adjusted to line and grade by setting it to a firm, unyielding bearing in a bed of freshly-made concrete, by the use of heavy wooden mauls. The face of the curb must be plumb and true to line, and the top of it carefully set to grade with close and even contact joints. After the curb has been set to line and grade, the trench on the footwalk side will be immediately filled with concrete to within 5 inches of the top of the curb, which will be thoroughly rammed and compacted, after which it will immediately be covered with earth to prevent injury to it through too rapid evaporation, etc. In case vitrified-block gutters are to be laid in front of the curb, any portion of the concrete base of the curb that would interfere with the laying of such gutters must be removed immediately after the curb is set.

(d) *Resetting 6 by 20 inch granite and bluestone curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work. Under this classification also the curb may be adjusted to line and grade without removing it from its trench, if so ordered by the engineer.

(e) *Resetting 8 by 8 inch granite curb.*—The work to be done under this classification is identical with that specified for setting this class of curb, except that no hauling of the curb is required other than that incidental to the necessary disposition of it upon the line of the work, and no new concrete is required other than that sufficient to embed the stone and back and adjust it to line and grade.

(f) *General instructions.*—All curb will be furnished to the contractor at the District property yard, and will be hauled by him to the site of the work; any curbing unaccounted for or improperly disposed of or damaged or broken through careless or unskilled handling will be charged against him, and the value of the loss to the District will be deducted from any amount due the contractor for work done, as determined by the engineer.

All expenses connected with or incidental to the work of setting or resetting curb, as described above, including the hauling of the curbing, preparing the curb trenches, and the necessary grading connected therewith, furnishing gravel and spalls, furnishing and placing concrete, and all other material and labor necessary to execute the work in accordance with the specifications therefor, are included in the fixed price for the respective items as hereinafter stated. The cost of dressing, jointing, or cutting the curb will be paid for additionally, but no other claim for additional compensation will be entertained.

Should the adjoining brick footwalks be disturbed in order to set or reset the curb, the portion so disturbed shall be repaved, if required by the engineer, without cost to the District.

16. *Prices for additional work.*—Contractors must do such additional work incident to the construction of new pavements as may be ordered on each street by the engineer commissioner. All such work shall be in accordance with current District specifications. Prices paid for this work will be as stated below:

(1) Removing old curb, including haul not to exceed 2 miles, 8 cents per linear foot.

(2) Hauling same beyond distance of 2 miles, 1 cent per linear foot per mile.

(3) Hauling from District property yard and setting 6 by 20 inch curb, 25 cents per linear foot.

(4) Resetting 6 by 20 inch granite and bluestone curb, 25 cents per linear foot.

(5) Hauling from District property yard and setting 8 by 8 inch curb, 35 cents per linear foot.

(6) Resetting 8 by 8 inch curb on new concrete base, 31 cents per linear foot.

(7) Resetting 8 by 8 inch curb on old concrete base, 15 cents per linear foot.

(8) Dressing, jointing, and cutting curb, etc. (stonecutters' time), including setting-up labor, 65 cents per hour.

(9) Removing old rubble, cobble, flagging stone and brick, vitrified block or brick, etc., including haul not to exceed 2 miles, 15 cents per square yard.

(10) Removing old asphalt blocks, including haul not to exceed 2 miles, 20 cents per square yard.

(11) Removing old granite block, including haul not to exceed 2 miles, and removal of old paving bed and cleaning concrete base where same exists, 25 cents per square yard.

(12) Overhaul on items 9, 10, and 11, 1 cent per square yard per quarter mile or fraction thereof.

(13) Removing old coal-tar or asphalt surface and binder from concrete base in connection with resurfacing work, including haul, 12 cents per square yard.

(14) Grading and hauling earth not to exceed 1,000 feet, 55 cents per cubic yard.

(15) Grading and hauling macadam not to exceed 1,000 feet, 55 cents per cubic yard.

(16) Removing old coal-tar and bituminous pavement or base of the class laid since 1880 and hauling not to exceed 1,000 feet, \$1 per cubic yard.

(17) Removing old coal-tar and bituminous pavement or base of the class laid prior to 1880 and hauling same not to exceed 1,000 feet, \$1.85 per cubic yard.

(18) Removing old concrete base and hauling not to exceed 1,000 feet, \$1.50 per cubic yard.

(19) Hauling excavated material, per 100 feet over first 1,000 feet, 1 cent per cubic yard.

(20) Laying new or old vitrified brick or block on new 6-inch concrete base, \$1.30 per square yard.

(21) Laying or relaying vitrified brick or block on old concrete base, 60 cents per square yard.

(22) Laying and relaying asphalt block and vitrified brick or block on gravel base, 40 cents per square yard.

(23) Cleaning old vitrified brick or block for relaying, 25 cents per square yard.

(24) Laying and relaying granite block, 75 cents per square yard.

(25) Relaying cobble and rubble, 30 cents per square yard.

(26) Repairing cement walks, \$1.50 per square yard.

(27) Repairing brick walks, 25 cents per square yard.

(28) Laying asphaltic or broken stone base in place, \$3 per cubic yard.

(29) Laying Portland cement concrete base in place, \$5 per cubic yard.

(30) Adjusting manhole tops and basin covers to grade, \$1.50 each.

(31) Adjusting water-valve casings to grade, \$3 each.

(32) Adjusting electric light or telephone manhole tops to grade, as follows:

(a) Size 14 by 18 inches, \$1 each.

(b) Size 36 by 36 inches, \$1.50 each.

(c) Size 6 by 6 feet, \$4 each.

17. *Extra work.*—The contractor must be prepared to do any extra work that may be ordered in writing by the engineer, and for this he will be paid at current rates for work of a similar character, or if the extra work should be of a class for which no rate is fixed by current contracts, the actual reasonable cost to the contractor, as determined by the engineer, plus 15 per cent of said cost.

The contractor shall have no claim for compensation for extra work unless same is ordered in writing by the engineer. All additional and extra work shall conform to current District of Columbia specifications therefor.

18. *Guaranty.*—All work under this contract (except as herein stated) will be guaranteed and kept in repair by the contractor without cost to the District for a period of five years from date of its completion as indicated on the final voucher for each street. Ten per cent of the cost of this work will be retained and disposed of as provided for by law. No retent will be held on ordinary repairs (minor repairs), or on the cost of grading, the removal of old materials and of the overhaul on the same, and of stonecutting.

It is further expressly understood and agreed that if any of the pavements laid should, for any reason whatsoever, within the period of five years, prove inferior to the best laid in the District prior to July 1, 1904, then the contractor shall, on demand of the commissioners, remove such defective pavements and re-lay them with new material of approved quality. The engineer commissioner shall decide the question of inferiority.

On expiration of guaranty for maintenance the work is to be inspected, and all imperfections must be corrected where and to such extent as the engineer

shall direct, upon which the engineer will accept the same in writing, and until such acceptance the guaranty shall be in force. Repairs that may become necessary during the guaranty period will be made by the contractor when ordered by the engineer commissioner.

19. *Retain fund.*—The retain fund shall be subject to the control of the Commissioners of the District of Columbia for the purpose of maintaining the work in repair and making good any defects discovered during the period specified. In the event of the contractor failing to make such necessary repairs after notice to do so, the commissioners may cause such work to be done and deduct the cost of the same from the retain fund, and, in their discretion, may require of the contractor and his sureties that any portion of the said retain fund which may have been expended for the maintenance of the work shall be made good by further deposit.

20. *Cuts.*—Contractors shall be responsible for any work done upon any street over plumbers' cuts or other work done by the permission of the commissioners before the work is begun.

21. *Modification.*—The commissioners reserve the right to modify these specifications as may from time to time seem desirable. The amount of compensation, if any, due the contractor for said modifications will be determined by the engineer commissioner on the same basis as in the case of extra work.

SPECIFICATIONS FOR LAYING CEMENT SIDEWALKS.

1. *Classes A and B.*—Work under class A will consist of all large work located on streets, avenues, places, etc., within the limits of the city of Washington (including Georgetown or West Washington), and all work on streets, avenues, places, etc., beyond said limits where the roadways are paved. Work under class B will consist of all large work located on streets, avenues, places, etc., outside the limits of the city of Washington, as above, where the roadways are not paved, and of all small work wherever located. For classification for purposes of payment under this contract any item of work which exceeds 100 square yards will be rated and paid for as "large work," items of 100 square yards or less being rated as "small work." The aggregate of the item will be the determining consideration, since it may consist of two or more detached pieces in the same vicinity. Any questions as to the classification under this paragraph will be decided by the engineer commissioner.

2. *Grading.*—The contractor is to make such cutting and filling as may be necessary to bring the foundation, when compacted, to the level of 5 inches below the surface of the finished pavement. Grading, either cut or fill, to the needed depth, not exceeding 1 foot on the average for each separate piece of work, and including the area of tree spaces, either continuous or interrupted, must be done without additional or extra charge, inclusive of removal and haul to designated property yard of all sidewalk material between the curb line and the back of the new work, whether the old sidewalk is wholly replaced by the new cement part or not.

Grading in excess of the 1-foot average depth will be paid for as additional work at prices stated herein.

Material for filling must be suitable for the purpose and satisfactory to the engineer, and must be placed in layers and compacted for making good foundation, as required by him.

In case of excavation any unsuitable or objectional material in the bed, as determined by the engineer, is to be wholly removed and the spaces filled with broken stone or other suitable material satisfactory to him.

The contractor is to trim the bed so as to make it parallel to the surface of the finished pavement and thoroughly compact the bed by rolling or ramming without extra pay.

On the bed thus prepared will be laid, after compacting, 4 inches of cement concrete and 1 inch of cement mortar covered by a thin, dry surface coat, all made of the materials and in the manner hereafter described.

3. *Cement.*—The cement used will be a standard brand of Portland cement, uninjured by age or exposure, and delivered at the work in original undamaged packages. The right is reserved to reject any cement that has not established itself as a high-grade Portland cement and has not been made by the same mill for two years and given satisfaction in use for at least one year under climatic and other conditions of at least equal severity as those of the work proposed. The contractor shall keep the cement in store, under proper cover, in the city of Washington, and shall properly protect it until used. The

engineer shall have the right to test the cement as he judges necessary and to reject any or all lots. The cement, after being accepted, can not be transferred or used by the contractor on other work without the consent of the engineer commissioner. No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to extend over such length of time as the engineer commissioner may think necessary. The cement while in storage or upon the work or while being hauled upon the work shall be properly protected, and no cement shall be used which, in the opinion of the engineer commissioner, has been injured by age or exposure. The cement shall be kept by the contractor in store, under proper cover, in the city of Washington, subject to inspection for at least 40 days after notifying the inspector of asphalt and cements before it can be used on the streets, if deemed advisable by the engineer commissioner. Should the contractor's work be delayed by his failure to keep himself supplied with the necessary amount of approved cement, the District shall have the right to furnish him with tested cement from the stock on hand at its warehouse, and charge said contractor with the cost of same at the rate of \$1.50 per barrel of Portland cement for each and every barrel so furnished, and collect the amount due therefor from any moneys found to be due to said contractor by the District.

No cement shall be used upon the work until it has been tested in the office of the engineer commissioner and accepted by him, the tests to extend over such length of time not exceeding 28 days as the engineer commissioner may think necessary, said tests to be conducted in accordance with the methods prescribed in circular 33 of the Bureau of Standards, United States Government specifications for Portland cement.

4. *Sand*.—The sand used shall be clean and sharp, from fine to coarse, free from sewerage, mud, clay, mica, paper, leaves, chips, and other foreign matter, but may show when shaken with water and after subsidence not more than 3 per cent by volume of silt or loam. Sand used for surface layer must be screened on line of work, screen to be used for this purpose to be designated by the engineer. Sand stored at the work shall, when required, be dumped on boards or other suitable platform and kept as clean as when delivered.

5. *Gravel*.—The gravel shall be from small to medium size and as good in quality as the best Potomac River washed gravel. The gravel shall be free from dust, dirt, chips, leaves, and other foreign or objectionable matter, and when required shall be dumped on boards and cared for as provided for sand in the preceding paragraph.

6. *Mortar and concrete*.—The mortar shall be composed of the cement and sand in the proportion of 1 to 2 by volume, thoroughly mixed dry; a sufficient quantity of water will be added afterwards by fine sprinkling, to form upon remixing a stiff plastic paste. The proportions are intended to secure a mortar in which every particle of sand is enveloped by cement and all voids in the gravel filled with mortar, and this result must be obtained to the satisfaction of the engineer. If the mixing be by hand, it shall be done on a water-tight platform with tight, raised edges, and the cement spread first. No batch shall contain more than one barrel of cement.

The mixing shall be done by the use of shovels, hoes, and rakes until a thoroughly uniform mortar of proper consistency, as above described, is secured.

7. *Concrete*.—To the mortar, made as above directed, shall be added 5 parts by volume of the specified gravel, which shall have been thoroughly drenched with water just before it is added to the mortar. The drenching shall not be done in the barrow, nor otherwise to permit the addition of free water to the mortar. Each batch of concrete shall be thoroughly mixed until each piece of gravel is wholly coated with mortar and in a manner satisfactory to the engineer. If the mixing be by hand, it shall be done on a water-tight platform, with tight, raised edges, and in the mixing the gravel shall be first spread over the mortar. The concrete immediately after mixing will be spread upon the foundation, so that the mortar shall remain evenly incorporated with the gravel and then thoroughly compacted by ramming. The slab or flag divisions are then to be marked off to the size and markings cut 3 inches deep. The space made by the cutting tool shall be immediately filled with dry sand and well rammed. Should the contractor so desire, he will be permitted to substitute broken stone for the gravel used in concrete. Such stone should be hard, durable, and properly broken to a size small enough to pass through a ring 2 inches in diameter and may be the run of the crusher, containing not over 1 per cent of material passing a No. 70 sieve. It shall be free from foreign substances, as provided for gravel.

8. *Mortar and surface.*—Mortar for the surface layer shall be made of the specified cement and sand, mixed in the manner as for mortar for concrete, but in the proportion of 2 to 3 by volume. The mortar shall be spread while fresh upon the concrete base while the latter is still soft and adhesive and before it shall have reached its first set, in such quantity that after thorough manipulation it shall be 1 inch in thickness. It is then to be leveled off and beaten with wooden battens, so as to break any air cells and make the surfacing perfectly solid and at the true grade. No pavement marked by sand which has been spread over it for protection will be accepted.

9. *Dry coat.*—A coating of dry cement and fine sand in equal proportions by volume and such part and kind of coloring matter as the engineer may direct, thoroughly mixed, is then to be floated into the layer, and by a skillful use of tools the surface is to be made smooth. The joints of the blocks will then be made to a depth of one-half inch immediately over the joints in the concrete base and the blocks brought to a true line and grade and finished without marginal line with trowels to the satisfaction of the engineer. The trowel finish above described will be the rule of the work, but in such cases as may require it for the sake of uniformity, with adjacent pavements or other sufficient reasons, the use of marginal lines and a rolled finish may be required. The decision as to the finish to be used will be made by the engineer.

Any lack of compaction between the concrete and mortar layers shall be sufficient reason for requiring entire removal and the substitution of new and satisfactory work.

10. *Protection of work.*—The pavement is to be kept moist, protected against the weather, and guarded against foot travel until it has set. Care shall be taken at all times not to interfere with business or travel more than is absolutely necessary for faithful execution of the work. Free ingress and egress from the street to entrances to premises fronting on the sidewalk shall be provided for at all times, and during the time that travel is closed the contractor shall provide a temporary walk and keep it in good condition, safe for pedestrians and easy of access from adjoining walks or roadways. The contractor will not be allowed to obstruct private driveways or approaches or to dig up or occupy the streets by material more than is absolutely necessary for the prosecution of the work. Special care will be taken to inconvenience the public as little as possible. The contractor will be held responsible for all injury done to the work in any way until it has been accepted and measured by the engineer.

11. *Driveways.*—Driveways shall be laid the same as sidewalks, except that the surface shall be divided into small squares as in K Street NW. near Connecticut Avenue. The plan of driveways shall be as directed by the engineer.

12. *Tree spaces.*—Tree spaces will be left as directed. These spaces and also other edges of the work not abutting against curb, poles, or straight lines of parking, terrace, or coping will be outlined by planed boards of sound pine, 5 inches deep, set on edge to true line, and with top edge even with the pavement surface.

The edges of the new pavement not joining a curb or coping are to be clearly cut down on a true line 1 inch below the finished surface. The edges adjacent to interrupted tree spaces are to be plaster finished. The area of the tree space, either continuous or interrupted, is to be filled with earth up to the level of the pavement.

13. *Plumbing.*—All preliminary plumbing work will be done by the District. The contractor will be held responsible for all plumbing appurtenances within the limits of the finished sidewalk being at its grade and for any damage or obstruction thereto due to his operation.

14. *Cleaning work.*—Before acceptance of the work it will be cleaned and all debris and unused material removed. No crumbling or uneven edges of the sidewalk will be allowed to remain. Pine strips at edges of concrete will not be removed before 48 hours after the pavement is laid, or a longer period if the condition of the pavement, in the judgment of the engineer, requires it.

15. *Inspection of work.*—The engineer will appoint an inspector to see that each piece of work, including curb work, is graded and laid according to specifications and directions. The District will not pay for any work done during the absence of the inspector.

16. *General instructions.*—All curb will be furnished to the contractor at the District property yard and will be hauled by him to the site of the work; any curbing unaccounted for or improperly disposed of or damaged or broken through careless or unskilled handling will be charged against him, and the

value of the loss to the District will be deducted from any amount due the contractor for work done, as determined by the engineer.

All expenses connected with or incidental to the work of setting or resetting curb, as described above, including the hauling of the curbing, preparing the curb trenches, and the necessary grading connected therewith, furnishing gravel and spalls, furnishing and placing concrete, and all other material and labor necessary to execute the work in accordance with the specifications therefor are included in the fixed price for the respective items as hereinafter stated. The cost of dressing, jointing, or cutting the curb will be paid for additionally, but no other claim for additional compensation will be entertained.

Should the adjoining brick footwalks be disturbed in order to set or reset the curb, the portion so disturbed shall be repaved, if required by the engineer, without cost to the District.

17. *Additional work.*—Contractors must do such additional work incident to construction of new pavements as may be ordered on each street by the engineer commissioner. All such work shall be in accordance with current District specifications. Prices paid for this work will be as stated below:

- (1) Removing old curb, including haul not to exceed 2 miles, 8 cents per linear foot.
- (2) Hauling same beyond distance of 2 miles, 1 cent per linear foot per mile or fraction thereof.
- (3) Hauling from District property yard and setting 6 by 20 inch curb, class A, 25 cents per linear foot.
- (4) Hauling from District property yard and setting 6 by 20 inch curb, class B, 28 cents per linear foot.
- (5) Resetting 6 by 20 inch and bluestone curb, 25 cents per linear foot.
- (6) Realigning 6 by 20 inch and bluestone curb, 15 cents per linear foot.
- (7) Hauling from District property yard and setting 8 by 8 inch curb, class A, 35 cents per linear foot.
- (8) Hauling from District property yard and setting 8 by 8 inch curb, class B, 38 cents per linear foot.
- (9) Resetting 8 by 8 inch curb on new concrete base, 31 cents per linear foot.
- (10) Resetting 8 by 8 inch curb on old concrete base, 15 cents per linear foot.
- (11) Dressing, jointing, and cutting curb, etc. (stonecutters' time), including setting-up labor, 65 cents per hour.
- (12) Removing old rubble, cobble, flagging stone and brick, asphalt block, vitrified block or brick, etc., including haul not to exceed 2 miles, 15 cents per square yard.
- (13) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.
- (14) Removing old granite block, including haul not to exceed 2 miles, and removal of old paving bed and cleaning concrete base where same exists, 25 cents per square yard.
- (15) Hauling same beyond distance of 2 miles, 1 cent per square yard per quarter mile or fraction thereof.
- (16) Grading and hauling earth, not to exceed 1,000 feet, 55 cents per cubic yard.
- (17) Grading and hauling macadam not to exceed 1,000 feet, 55 cents per cubic yard.
- (18) Removing old coal-tar and bituminous pavement or base and hauling not to exceed 1,000 feet, \$1 per cubic yard.
- (19) Removing old concrete base and hauling not to exceed 1,000 feet, \$1.50 per cubic yard.
- (20) Hauling excavated material, per 100 feet over first 1,000 feet, 1 cent per cubic yard.
- (21) Laying new or old vitrified brick or block on new 6-inch concrete base, \$1.30 per square yard.
- (22) Laying or relaying vitrified brick or block on old concrete base, 60 cents per square yard.
- (23) Laying and relaying asphalt block and vitrified brick or block on gravel base, 40 cents per square yard.
- (24) Cleaning old vitrified brick or block for relaying, 25 cents per square yard.
- (25) Laying and relaying granite block, 75 cents per square yard.
- (26) Relaying cobble and rubble, 30 cents per square yard.

- (27) Repairing brick walks, 25 cents per square yard.
- (28) Laying asphaltic or broken stone base in place, \$3 per cubic yard.
- (29) Laying Portland cement concrete base in place, \$5 per square yard.
- (30) Adjusting man-hole tops and basin covers to grade, \$1.50 each.
- (31) Adjusting water-valve casings to grade, \$3 each.
- (32) Adjusting electric-light or telephone man-hole tops to grade, as follows:
 - (a) Size, 14 by 18 inches, \$1 each.
 - (b) Size, 36 by 36 inches, \$1.50 each.
 - (c) Size, 6 by 6 feet, \$4 each.
 - (d) Size, 6 by 6 foot manholes, with 36 by 36 inch covers, set on I beams in concrete, \$7 each.

The work of repairing cuts in cement walks, which has in recent years been done under these specifications, will be otherwise arranged for and will not be done by this contractor.

The repaving of all roadway pavements necessarily disturbed in setting or resetting curb will be done by the District without cost to the contractor.

The setting and resetting of the curb shall be done according to current District of Columbia specifications for such work.

The old curb may be removed and reset to grade and line, or the old curb may be realigned without removing it from place, as required by the engineer.

18. Existing brick walks abutting the ends of new cement walks are to be relaid, if necessary, without cost to the District, in such manner as to make them conform to the grade, etc., of the new walks in a manner satisfactory to the engineer.

19. *Amount of work.*—The work to be done under this contract consists in laying cement sidewalks in such places and in such order as may be directed by the commissioners, under appropriations for the fiscal year ending June 30, 1915, except as related below. The amount of work to be done under this contract can not be stated with any precision, but as an indication of what is anticipated the amount of the contractor's bond will be determined on the basis of 70,000 square yards. No guaranty is given that the quantity here stated will be equalled or may not be exceeded. The bids will be classified and award of contract based on 40,000 square yards of class A and 30,000 square yards of class B.

This contract will not include that small amount of public-sidewalk construction which, on account of its urgency, has in the past been customarily laid by private parties under permit, but which in the future it is intended to have laid by the District's day-labor organization. This work has not been included in past contracts for the reason that it has been done by private agents, and will not be included in this contract because, for purposes of good administration, it will be done by the District by day labor.

20. *Extra work.*—The contractor must be prepared to do any extra work that may be ordered in writing by the engineer, arising out of any modification of these specifications that may appear necessary, and for this he will be paid at current rates for work of similar character, or, if the extra work should be of a class for which rate is fixed by current contracts, the actual reasonable cost to the contractor, as determined by the engineer, plus 15 per cent, the contractor shall have no claim for compensation for extra work unless the same is ordered in writing by the engineer. All additional and extra work shall conform to current District of Columbia specifications therefor.

21. *Guaranty.*—All work under this contract (except as herein stated) will be guaranteed and kept in repair by the contractor without cost to the District for a period of five years from date of its acceptance by the commissioners. This date shall be the date of the final voucher for each street hereunder. Ten per cent of the cost of this work will be retained and disposed of as provided for by law. No retent will be held on the cost of grading or the removal of old materials, and of the overhaul on the same and of stonecutting.

It is further expressly understood and agreed that if any of the pavements laid should, for any reason whatsoever, within the period of five years, prove inferior to the best laid in the District prior to July 1, 1904, then the contractor shall, on demand of the commissioners, remove such defective pavements and relay them with new material of approved quality and in accordance with these specifications. The engineer commissioner shall decide the question of inferiority.

On expiration of guaranty for maintenance the work is to be inspected, and all imperfections, depressions, and unevenness of surface, alignment and grade of curbs, sidewalks, etc., must be corrected where and to such an extent as the

engineer commissioner shall direct, upon which the engineer commissioner will accept the same in writing, and until such acceptance the guaranty shall be in force. Repairs that may become necessary during the guaranty period will be made by the contractor when ordered by the engineer.

22. *Retain fund.*—The retain fund shall be subject to the control of the Commissioners of the District of Columbia for the purposes provided by law for the purpose of maintaining the work in repair and making good any defects discovered during the period specified.

In the event of the contractor failing to make such necessary repairs after notice to do so, the commissioners may cause such work to be done and deduct the cost of the same from the retain fund, and, in their discretion, may require the contractor and his sureties that any portion of the said retain fund which may have been expended for the maintenance of the work shall be made good by further deposit.

23. *Site of work.*—The bidder is expected to examine the site of work before bidding, as no allowance will be made for any additional difficulties which may arise, either affecting the original construction or maintenance of the finished work.

24. Certificates of indebtedness against street railway companies will be given to the contractor for all work done and all materials furnished by him for the space which must be paved and kept in repair at the expense of said companies in accordance with existing laws.

25. Contractors shall be responsible for any work done upon any street over plumbers' cuts or other work done by the permission of the commissioners before the work is begun.

26. The commissioners reserve the right to modify these specifications as may from time to time seem desirable. The amount of compensation, if any, due the contractor for said modifications will be determined by the engineer commissioner on the same basis as in the case of extra work.

SPECIFICATIONS FOR TRUNK SEWERS.

1. *Location.*—

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2. *Bids.*—The contractor shall, for the price or prices bid, do all the work prescribed in these specifications; make the requisite excavations for building the sewer and the appertaining structures and connections; shall do all ditching, diking, pumping, bailing, and draining, all sheeting, bracing, and shoring; shall make all provisions necessary to maintain and protect adjacent buildings, fences, trees, gas pipes, water courses, conduits, culverts, sewers, railways, electric lines, and other structures, and shall repair all damages to the same which may result from his operations; shall provide all bridges, fences, or other means of maintaining and protecting travel on intercepted streets, roads, and railroads, and on streets or roads in which the trenches are excavated, after giving due notice to parties affected thereby; shall maintain the same in good and safe condition so long as may be necessary, and shall then remove such temporary expedients and restore such ways to their proper condition; shall provide watchmen, red lights, fences, and all other precautionary measures necessary to the protection of persons and property; shall provide all necessary centers, molds, and forms; shall construct all foundations, all brick, concrete, stone, and timber work; shall set in place all ironwork and refill all trenches; shall furnish all materials (except those specially mentioned in par. 13), and all tools, implements, labor, and transportation required to build and put the sewer in complete working order; and shall do each and all to the satisfaction of the engineer.

The prices bid are to include the cost of the removal of and delay or damages occasioned by trees, roots, timber or masonry structure, or other obstacles (whether shown on the plans or not) except rock.

For lumber left in trench no payment shall be allowed unless the same shall be specifically directed by the engineer prior to the refilling of the trench. The contractor ordinarily will use his judgment about leaving bracing lumber in place, but shall be in all cases responsible for any injury which may result to the sewer or to adjacent pavements, structures, water, gas, or other conduits by the removal of bracing, sheeting, or shoring.

3. *Drawings.*—The drawings which illustrate the work to be performed and which show the location, shapes, dimensions, and materials of the sewer to be constructed are on file in the engineer department. All work executed under this contract must conform with these drawings.

Should the position of pipes and other underground objects be found to differ from that indicated on the drawings, or if it shall be found necessary to modify the lines, grades, or positions, the contractor shall have no claim for extra compensation on that account.

4. *Order of work.*—The work shall be prosecuted in such order as the engineer shall direct. He shall determine whether the conditions are favorable for working, and may suspend the work or any portion of it whenever, in his opinion, the conditions are such as will not insure first-class construction.

5. *Street occupancy and traffic.*—The operations of the sewer contractor must be so conducted that traffic upon steam and street railways and ordinary street traffic may be maintained. All material excavated must be removed from the street or deposited as back filling upon completed work.

6. *Pavements.*—All pavements disturbed in doing sewer work for the width of the trenches, as defined in section 8 of these specifications, will be relaid by the commissioners. The contractor shall, without cost to the District, haul all cobble, rubble, bricks, blocks, and tiles taken up by him to a property yard to be designated by the engineer, and take receipt therefor. Macadam, hydraulic base, and sheet pavement material removed shall be piled in suitable places along the line of the work so as not to cause unnecessary obstruction of any kind, and during the progress of the work shall be guarded by the contractor against misappropriation. Whenever so ordered by the engineer, the contractor shall haul this material to a property yard to be designated by the engineer. No paving material of any kind removed in making excavation shall be used or appropriated by the contractor without written permission from the engineer.

If any pavement be injured by the contractor outside the limits prescribed by the trenches the cost of restoring such excess shall be charged against him and deducted from any amount found due him. He will maintain the surface over the line of the trench up to the street grade with the best material obtainable from the excavation until such time as the pavement is relaid. The cost of subsequent repairs of all pavements relaid over or adjacent to sewer trenches on account of sewer work, or of any work made necessary, within the period of one year, for which the sewer and their appurtenances are guaranteed, by settlement of the back filling of the trenches will be charged against the 10 per cent retained and invested as provided in paragraph 9 of the instructions to bidders.

7. *Private property.*—Care shall be taken not to move without the consent of the person owning or controlling them any trees, fences, water or gas pipes, sewers, drains, conduits, poles or wires for electrical purposes, railways, or other structures, and in crossing or working near them they shall be sustained securely in place until the work is completed, and shall be so treated as to render their condition as efficient and permanent as before.

In sewer construction along a right of way through public or private property the contractor shall so conduct his work as not to damage said property, and so as to interfere with its ordinary use as little as possible; he shall, upon completion of the sewer, restore the surface as nearly as possible to the condition in which he found it. No material shall be used or removed from the premises without the consent of the owner or responsible party in charge of the property.

8. *Measurements.*—Measurements of work shall be made as follows:

Length: The length of sewer paid for by length, and the length of excavation shall be the whole length of the completed sewer without deduction for the space occupied by manholes.

Width: The width of the trench at any cross section shall be considered as equal to the greatest horizontal diameter of the sewer at that cross section, including the walls thereof, with 9 inches added thereto.

Depth: The depth at any cross section shall be considered as equal to the mean depth from the surface to the outside bottom of the sewer at that section.

In submitting proposals bidders will be guided by the profiles given upon the drawings. These are approximate and any variance therefrom shall not be the basis of any claim for compensation above that provided for in the contract rates.

9. *Trenches.*—The ground shall be excavated in open trenches to such width and depth as may be necessary for proper sewer construction. If, however, in the judgment of the engineer, it is deemed advisable, special permission may be given for the construction of portions of the work in tunnel, in which case excavation will be allowed as if construction were in open trench. But at any time during such construction the engineer may direct the excavation to be made in open trench.

The portion of the trench below the springing line of the sewer shall be excavated to conform to the external form and dimensions of the same. If the character of the ground met with in excavating is such that the external form of the sewer can not be preserved, the excavation shall be made to conform as nearly as possible to the external shape and dimensions of the sewer, and the space between the external sewer lines and the bottom and sides of the excavation as made, for a width equal to the greatest outside horizontal diameter of the sewer, shall be filled with hydraulic cement, concrete, or brick masonry, as directed.

If the material found in the sewer trench be, in the opinion of the engineer, unsuitable for a foundation, upon receipt of a written order it shall be removed by the contractor to such depth and width as may be directed, and suitable material shall be deposited in its place. This additional excavation and deposited material will be paid for as extra work.

The utmost care shall be taken to spare the roots of shade trees and to protect trees and shrubbery in public parks adjacent to line of work from injury. Also care must be taken to avoid unnecessary damages to park surfaces and roadways during construction.

Whenever it is necessary to intercept work near or in any way interfere with any public or house sewer, drain, pipe, catch basin, culvert, or other similar structure, the contractor shall maintain the same in working order and shall repair and make good any damage done to or by any of them during the progress of the work.

During construction permission may be secured to substitute for any sewer in use which is affected by the work hereby contracted for a drain upon an approved location of equal capacity and of substantial construction, subject in all particulars to the approval of the engineer.

10. *Rock*.—Only such ledge or rock as in the opinion of the engineer requires blasting for its removal or bowlders of one-half cubic yard or more in volume which are removed from the trench will be estimated as rock excavation. Before beginning rock excavation the contractor must procure a written order from the engineer. All excavated material shall be considered and classed as ordinary excavation, except rock removed by special orders as above. Indurated gravel, loose or disintegrated rock, and materials of like character in the opinion of the engineer will not be classed as rock.

For rock excavated from trench \$3 per cubic yard will be allowed the contractor, and excavation classified as rock will not be included also as ordinary excavation.

11. *Blasting*.—Before blasting, the contractor must procure a written order from the engineer.

Blasts shall be covered with heavy timbers chained together. Caps or other explosives shall be kept in no case be kept in the same place in which dynamite or other explosives are stored, and, in general, the precaution against accidents from blasting shall be entirely satisfactory to the engineer. The contractor shall be liable for all damages to persons or property caused by blasts or explosives.

12. *Back filling*.—The back filling must be brought up evenly on both sides of the sewer with the best material from the excavation, so that no unbalanced pressure shall be brought upon the masonry. It shall be spread in horizontal layers not exceeding 6 inches in depth before ramming and thoroughly rammed to the top of the trench. No less than 2 men shall be employed in ramming for each shoveler engaged in replacing the back filling, which shall be compacted with iron-shod rammers, each weighing not less than 12 pounds. When the back filling is deposited by means of wheelbarrows, carts, or wagons, or by machinery, the ramming shall be done as directed by the engineer.

All slides or caving of sides of the trenches or cuts shall be taken out and back filled by the contractor.

As the trench is refilled, the bracing, etc., shall be removed in such manner as to prevent the caving of the sides of the trench. If sheeting is used, so much of it as extends below the crown of the arch of the basin must be withdrawn, unless otherwise directed by the engineer, after refilling over the haunches but before more than 6 inches of earth is placed on the crown of arch and before the center is struck.

As the sheet planks are withdrawn the vacancies left by each shall be carefully refilled by ramming with tools especially adapted for the purpose, by watering, or otherwise, as may be directed.

13. *Materials*.—The contractor will be furnished at the District property yards with all the necessary sewer pipes, manhole steps, and cast-iron manhole

tops with covers, the value of which material actually used in the work will not be charged against him. He will also be furnished at the District yards with all the cements, invert blocks, and vitrified bricks required for the work, the value of which will be charged against him at the following rates: Portland cement, \$1.50 per barrel; invert blocks, 50 cents per linear foot; vitrified bricks, \$18 per thousand.

Where cement is furnished in bags, the bags will be returned by the contractor or charged against him at the rate of 11 cents each.

The contractor shall convey materials from the points where they are delivered by the commissioners and store the same in the vicinity of the works. He shall be responsible for the loss incurred or damage done to said materials from the time of their delivery until the work is accepted. No materials shall be applied to other use than that for which they are issued.

The materials from the trenches and those used in constructing the sewer appurtenances shall be so deposited as not to hinder nor endanger public travel, and so that free access may be had at all times to all fire plugs, water gates, manholes, and catch basins in the vicinity of the work.

14. *Concrete masonry.*—Concrete masonry will be classified as follows:

Concrete masonry A will be composed of 1 barrel Portland cement (net weight 380 pounds), 8 cubic feet sand, 8 cubic feet pebbles, 8 cubic feet broken stone; water as directed by the engineer.

Concrete masonry B will be composed of 1 barrel Portland cement (net weight 380 pounds), 10 cubic feet sand, 10 cubic feet pebbles, 10 cubic feet broken stone; water as directed by the engineer.

Concrete masonry C will be composed of 1 barrel Portland cement (net weight 380 pounds), 12 cubic feet sand, 12 cubic feet pebbles, 12 cubic feet broken stone; water as directed by the engineer.

Concrete masonry D will be composed of 1 barrel Portland cement (net weight 380 pounds), 8 cubic feet sand, 16 cubic feet pebbles; water as directed by the engineer.

Concrete masonry E will be composed of 1 barrel Portland cement (net weight 380 pounds), 10 cubic feet sand, 20 cubic feet pebbles; water as directed by the engineer.

Concrete masonry F will be composed of 1 barrel Portland cement (net weight 380 pounds), 12 cubic feet sand, 24 cubic feet pebbles; water as directed by the engineer.

Suitable appliances, satisfactory to the engineer, for measuring the ingredients for each batch of concrete shall be kept on the line of the work.

15. *Mixing concrete.*—The thorough mixing and incorporation of all materials will be required. If done by hand labor, the dry cement and sand shall be mixed and turned over by skilled workmen with shovels not less than six times before the water is added; the pebbles and broken stone, after being wetted, shall be added to the mixed cement, sand, and water. The whole mass shall then be thoroughly turned over by skilled workmen, with shovels, not less than four times, until every particle of stone is completely enveloped with mortar.

The whole operation of mixing and laying each batch shall be performed as expeditiously as possible by the aid of machinery or a sufficient number of skilled men.

No concrete which has once set shall be used as metal for mixing a new batch.

16. *Placing concrete.*—The concrete shall not be thrown or dumped from a height, but must be lowered in a vessel and so carefully deposited as to retain the constituents evenly incorporated, as mixed, entirely free from foreign matter of any kind.

In lowering material into the trenches care should be taken not to throw dirt upon freshly laid concrete or other masonry in place. At all stages and for all classes of work concrete and mortar must be kept as free as possible from dirt of every kind, and, if unavoidably mixed with dirt, shall be removed and replaced to the satisfaction of the engineer.

No concrete or other work shall be laid in water, and no water shall be thrown upon or allowed to flow over or rise upon masonry until the mortar has had ample time to become set.

Each batch of concrete shall be spread in place in horizontal layers not exceeding 5 inches in thickness before ramming, and shall be at once thoroughly compacted by ramming.

When a layer of concrete has become set it will be carefully cleaned of all dirt or loose fragments, and a thin layer of mortar spread thereon before depositing the fresh concrete.

Concrete shall not be used after it has begun to show evidences of setting.

17. *Molds, etc.*—Strong molds, forms, and centers, satisfactory to the engineer, made to fit the curves and shapes of all work done under this contract, shall be provided by the contractor for each stage and section of the work, and when they lose their proper dimensions or shape they shall be replaced by others. Planking, forming the faces of all exposed walls, shall be so matched and placed as to give an even and uniform surface to the concrete. Before being used the molds shall be scraped clean of cement and dirt. Their setting up, striking, and general management shall conform to directions given by the engineer. For concrete inverts, where brick lining is omitted, sheet steel collapsible forms must be used. All work must be specially smooth and well filled, and no plastering will be allowed.

When, in the opinion of the engineer, it is necessary to protect the masonry from injury, the sewer shall be braced inside without any additional charge. The bracing shall be done in a manner satisfactory to the engineer, and it shall be left in place until he shall direct its removal.

18. *Water.*—Water used for mortar and concrete shall be fresh and clean, free from earth, dirt, or sewage, and shall be used in such quantity as the engineer may direct.

19. *Sand.*—Sand for concrete and sand for mortar shall be clean, sharp sand, containing both fine and coarse grains, free from mud, sewage, mica, or other foreign matter, and at least equal in desirable qualities to the samples in the property office, District of Columbia, marked "Sample of sand for paving and concrete," and "Sample of sand for brickwork and plastering," respectively.

20. *Pebbles.*—Pebbles shall be from fine bank or river gravel, thoroughly screened, free from earthy or other foreign matter, and small enough to pass through a ring $1\frac{1}{2}$ inches in diameter, and shall not contain more than 5 per cent of material which shall pass through a No. 10 sieve.

21. *Broken stone.*—Broken stone for concrete masonry must be hard and of durable character, the run of the crusher, and it shall not contain more than 1 per cent of materials passing a No. 10 sieve. It shall be thoroughly cleansed from all foreign substances, and, if so ordered by the engineer, it shall be screened and washed. Detritus, or any material other than hard, angular fragments of stone, shall be considered a foreign substance. Every piece of stone for concrete masonry must be small enough in largest dimension to pass through a ring 2 inches in diameter.

22. *Mortar.*—Mortar used in this work shall be composed of Portland cement in perfect condition and loose, dry sand in the proportion of 1 barrel of cement (net weight 380 pounds), and 9 cubic feet of mortar sand, thoroughly mixed dry, and a sufficient quantity of water afterwards added to make a rather stiff paste. It shall be used within an hour after the addition of the water, but no mortar shall be used after having become hard or set.

23. *Mixing mortar.*—The thorough mixing and incorporation of all materials will be insisted upon. If done by hand labor the dry cement and sand shall be turned over and mixed with shovels by skilled workmen not less than six times before the water is added.

24. *Platforms.*—Platforms shall be provided upon which all sand, pebbles, and broken stone shall be placed when brought upon the line of the work and there kept until used.

25. *Mortar boxes.*—Tight mortar boxes shall be provided by the contractor, and no mortar shall be made otherwise than in such boxes, except for concrete. No deposits of sand or mixing of mortar will be permitted upon pavements.

26. *Invert blocks.*—Invert blocks shall be laid true to line and grade. A concrete bed of the required shape and dimensions shall first be prepared and a layer of mortar one-half inch thick spread upon this bed. Upon this coat of mortar the blocks shall be laid, and each block shall be carefully pressed down and bedded upon the mortar so as to insure a close contact throughout the bottom and back of surface of the blocks. The joints between consecutive blocks shall be full mortar joints and as close as practicable.

27. *Vitrified bricks.*—Each course of vitrified invert bricks shall be laid in full mortar joints, truly on line, and the joints upon the face of the work shall not exceed three-sixteenths inch in thickness.

28. *Bricks.*—Bricks used shall be of the best quality of whole new bricks, of uniform size, compact texture, burned hard and entirely through, with true surface, free from injurious cracks and flaws, tough and strong, and having a clear ring when struck together. They must have a crushing strength of not less than 4,500 pounds per square inch, and must not absorb more than 10

per cent of their weight of water, after having been thoroughly dried and then immersed for 24 hours in water. Samples will be subject to such tests as may be satisfactory to the engineer.

The bricks used upon the work must at least equal in quality the sample bricks in the property office, District of Columbia.

The truest and smoothest bricks will be used in the face of the masonry. All bricks delivered for use shall be culled by the contractor when required. No bricks rejected in the culling shall be used in any work done under this contract.

29. *Brickwork.*—Bricks must be thoroughly wet by immersion immediately before laying. Every course shall be laid with a line. Every brick must be thoroughly laid in full mortar joints on bottom, side, and end, which, for each brick must be formed by one operation. In no case is the joint to be made by grouting, or by working in mortar after laying the brick. No joint shall exceed three-eighths inch in thickness. All joints on faces shall be trowel struck.

Brick masonry below the springing line in brick sewers must be well and firmly bedded upon the foundation prepared for it or upon the wall of the adjacent excavation, as the case may be; and all spaces which would otherwise exist between the outer lines of the sewer and the walls of the foundation or excavation must be filled with hydraulic cement mortar, concrete, or brick masonry, as may be directed.

All unfinished brick masonry must be "racked back" or toothed, as may be directed, and when new work is joined to the unfinished portion, the latter must be thoroughly cleansed.

Brick masonry of sides and arches shall be bonded and keyed as directed, especial care being exercised with each ring against laying too large joints at the back. All joints shall be normal to the section of the sewer and all "lapping" of brick must be carefully avoided.

30. *Arches.*—Concrete arches shall be allowed to set at least 24 hours before any back filling or other weight shall be put upon them, and no walking or working thereon shall be allowed during said time.

31. *Steel reinforcement.*—Steel reinforcement, where required, will be furnished by the District of Columbia and the contractor will be required to handle and place same as directed, for which he will be given an extra order as provided for in paragraph No. 11 of the General Stipulations.

32. *Plastering.*—As soon as practicable after the "keying up" is completed the back of every arch of brick or concrete shall be thoroughly cleaned of dirt and loose or projecting mortar, and shall then be smoothly plastered, from the springing line to the crown, with a coat of mortar three-eighths inch thick; the work to be done by skilled workmen, using tools satisfactory to the engineer. This coat shall be allowed to become fully set before any back filling is placed or walking allowed upon it.

33. *Sewer pipe.*—Sewer pipe will be of the ring or plain cylindrical pattern.

34. *Laying sewer pipe.*—Laying pipe sewer shall be executed in the following manner: The trench shall first be excavated by the use of the prescribed form to the required depth, shape, and dimensions; concrete shall then be compactly rammed in the bottom to the required depth, and its upper surface brought to a plane lower than the grade of the sewer by thickness of the wall of the pipe. The pipe must be perfectly supported throughout its entire length upon its concrete bed; bringing the pipe to grade by means of stone, etc., will not be permitted. Concrete shall then be rammed upon the sides and haunches of the pipe to the full specified width and thickness, care being taken that no void spaces exist. The greatest care must be exercised that the alignment and grade of the pipes be not disturbed. The joints between the pipes shall be closed by pointing with stiff mortar, after which a layer of concrete shall be carried over them to a thickness of not less than 4 inches, and having a bottom width of not less than 12 inches. During the suspension of the work at night or at other times a suitable stopper shall be placed in the last pipe laid to prevent earth from washing in. No sand, mud, mortar, concrete, or other material shall be allowed on the inside of pipe sewers. Upon completion they must be left straight, clean, smooth, and in every other respect acceptable. Mortar and concrete shall be allowed to set before any back filling is placed or walking is allowed upon the sewer, and the greatest care must be taken not to disturb the pipes, haunching, and banding.

35. *Manholes.*—Brick manholes of the form shown on the drawing shall be constructed in the sewers wherever ordered by the engineer.

In sewers of greater span than 3 feet, the manholes shall spring from one side of the arch; in sewers having a span of 3 feet or less, the axis of the manholes shall be directly over the center of the sewer.

Connection for public and house sewers and catch basins shall be built into the manholes wherever required.

Each manhole shall have steps of wrought iron, built into brickwork, as shown on the drawings. Similar steps shall be built into the inverts of the sewers at the manholes as the brickwork progresses, as may be directed.

The contractor shall carefully and securely fit each manhole with a cast-iron frame and cover, as shown on the drawings.

36. *Water-tight work.*—Water-tight work is required in all construction.

37. *Connections.*—Connections with existing sewers shall be made by the contractor according to directions given by the engineer. The right to permit the connection of any public or house sewer with a sewer under construction before completion of the latter is expressly reserved to the commissioners.

38. *Replacing.*—When necessary to pump sewage in replacing and laying relief sewers the material pumped shall be carried by means of hose or other water-tight conveyor to the sewer or manhole designated by the engineer, and it shall not be allowed to flow into or over the surface.

39. *Piling.*—Piles are to be not less than 8 inches in diameter at the small end, of live timber, sound, straight, and free from rot, large knots, wind shakes, and all other defects. They may be of pine, spruce, white oak, or such other durable timber as the engineer may approve. They are to be well and carefully driven with small end down, plumb and true to position, by a heavy hammer, delivering blows in rapid succession, to a penetration under the last blow of one-half inch for a hammer weighing 2,000 pounds, falling 12 feet.

Each pile shall be stripped of bark, have all knots pared smooth, and shall have the lower end squared or pointed before the driving, as may be directed.

After driving, the pile shall be cut off so as to form a true and even bearing for the cap timber, which shall be fastened to each pile by a 2-inch treenail of white oak, Georgia or Florida pine, or hickory, or a 1-inch drift bolt driven through the cap and 10 inches into the head of the pile. Any pile split or otherwise injured in driving or driven out of position will be replaced by a sound one in true position. The top of any pile shall not be drawn over more than 9 inches after driving to allow capping. Any pile which is driven a greater distance from its true position than 9 inches or whose penetration exceeds $\frac{1}{2}$ inch under the last blow will be rejected and must be replaced by a pile driven adjacent thereto as directed by the engineer. While being driven, should a pile head become broomed or otherwise injured so as to prevent effective driving, the top shall be sawed off as directed. When necessary, in the judgment of the engineer, each pile shall be bound, while driving, with a strong iron band of a proper size to protect pile head. In all cases the pile must refuse for the penetration specified, with the top sufficiently above subgrade to permit cutting off all that portion of the piles split or otherwise injured in any way by the process of driving, when the pile is sawed off at subgrade. In no case will the use of a "follower" be permitted. The piles must be carefully sawed off by a horizontal cut at the required grade line. For piles rejected for any cause whatever no allowance will be made.

40. *Lumber.*—All lumber for use in the completed structure must be sound, straight grained, and free from sap, loose or rotten knots, wind shakes, or any other defect which would tend to impair its strength or durability; must be straight, of the dimensions given, with square edges, and uniform width and thickness throughout each piece. Each floor plank must be secured to each cap timber upon which it rests by two 6-inch spikes. All framing must be done in a thorough, workmanlike manner, and both material and workmanship will be subject to the inspection and approval of the engineer.

41. *Foremen.*—The contractor shall employ capable superintendents or foremen to represent him on the work, and they shall receive and obey orders from the engineer.

All foremen, mechanics, and others employed by the contractor shall be skilled in the several parts which are given them to do.

42. *Inspection.*—The contractor shall, when requested, provide the engineer with such ladders, lanterns, tools, and labor, samples, and other facilities as may be necessary for inspecting materials and work.

Imperfect materials or work which may be discovered shall be replaced or corrected immediately on the requirement of the engineer, notwithstanding that it may have been overlooked by the proper inspector, and included in a partial

payment. Materials condemned or rejected by the engineer may be branded or otherwise marked, and shall, on his demand, be at once removed to a satisfactory distance from the work. Any omission to disapprove the work at the time of inspection, or at the time of any monthly or other estimate, shall not relieve the contractor of any of his obligations, and all work, of whatever kind, which during its progress and before it is finally accepted may become damaged or prove unacceptable for any cause, shall be removed by the contractor and replaced by good and satisfactory work. If not removed within 24 hours after written notice from the engineer it shall be removed by that officer and the cost charged to the contractor and deducted from any amount due or which may become due him.

FORMS ACCOMPANYING ALL SPECIFICATIONS.

GENERAL STIPULATIONS.

These stipulations are part of the specifications.

1. *Bond*.—Good and sufficient bond in the penal sum equal to at least 25 per cent of the estimated amount of the contract, with sureties or a surety company satisfactory to the commissioners, will be required from all contractors, guaranteeing that their contract will be faithfully performed; that the contractor or contractors will be responsible for all claims for damages to persons, property, or premises arising out of his or their operations prior to the acceptance of the finished work, and that he or they will promptly make payments to all persons supplying him or them with labor and materials in the prosecution of the work provided for in the contract. In the event that the sureties or surety company become unsatisfactory to the said commissioners they may, in their discretion, require from the contractor an additional or new bond, in the same or a lesser penal sum, with sureties or a surety company satisfactory to them and to be conditioned as above required.

Upon the failure to furnish such additional or new bond within 30 days after written notice so to do, all payments under this contract will be withheld until such additional or new bond is furnished.

2. *Transfers*.—No contract or any interest therein shall be transferred by the parties to whom the award is made; such transfers will be null and void and will cause the contract to be annulled and the work to be given to other parties under the conditions mentioned herein.

3. *Patents*.—The contractor will be required to hold the District of Columbia harmless against all claims for the use of any patented article, process, or appliance in connection with the contract herein contemplated.

4. *Contractor's risk*.—All loss or damage due to negligence, or arising out of the nature of the work to be done, or from any unforeseen or unusual obstructions or difficulties which may be encountered in the prosecution of the same, or from the action of the elements, will be sustained by the contractor.

5. *Employees*.—The contractor shall employ capable superintendents or foremen to represent him on the work, and they shall receive and obey orders from the engineer. He shall so conduct his operations as to interfere with the work of other District contractors as little as possible. The foreman, mechanics, and others employed by the contractor shall be skilled in the several parts which are given them to do.

An employee or agent of the contractor who shall use profane or abusive language to the inspector, or otherwise impede or embarrass him in the performance of his duty, or who, in the opinion of the engineer, is careless or incompetent, or obstructs the progress of the work, or disobeys or evades the instructions given by the engineer, shall be immediately discharged and not again employed without the consent of the engineer.

6. *Weather*.—The contractor shall suspend all work under the contract when notified by the engineer that the weather is unsuitable for carrying it on.

If work is allowed during cold or freezing weather, the contractor shall take such additional precautions as the engineer shall require, without additional expense, and under no circumstances shall materials be used which have been injured by the weather.

7. *Inspection*.—Inspectors may be appointed who shall have access to all parts of the work at all times and whose duty it shall be to point out to the contractors any neglect or disregard of the specifications of the contract; but the right of final rejection of the work will not be waived at any time. Upon

all technical questions concerning the execution of the work, in accordance with the specifications and the measurements thereof, the decision of the engineer shall be final. Ordinarily one inspector will be employed by the District of Columbia for each section of the work under contract; but if, on account of any apparent disregard of the specifications, additional inspectors shall be required, they will be employed by the District of Columbia at the rate not to exceed \$6 per diem each, and the cost of same will be charged to the contractor.

8. *Condemned work.*—All materials furnished and work done not in accordance with these specifications shall be removed within 24 hours after written notice from the engineer, by and at the expense of the contractor, or, in case of failure to do so, it shall be removed by the District of Columbia and the cost thereof charged to the contractor and deducted from the amount due or which may become due him. None but the best material of the several descriptions shall be used.

9. *District material.*—No materials furnished by the District shall be applied to any other use, public or private, than that for which they are issued to the contractor. The contractor will be held responsible for all materials delivered to him upon requisition, and shall be charged for all materials delivered upon said requisition. Should the amount of materials actually delivered and not properly accounted for exceed the amount used upon the work, the cost to the District of the difference must be made good by the contractor and will be deducted from any moneys which may be due him.

Any material that is the property of the District that is not accounted for by the contractor to the satisfaction of the engineer will be charged against the contractor at the contract price for similar material.

10. *Failure.*—If the contractor shall delay or fail to commence with the delivery of the material or the performance of the work as specified herein, or shall, in the judgment of the Commissioners of the District of Columbia, fail to prosecute faithfully and diligently the work in accordance with the specifications and requirements of this contract, then, in either case, the said commissioners shall have the power to annul this contract by giving notice in writing to that effect to the contractor, and upon the giving of such notice all payments to the contractor under this contract shall cease, and all money or reserved percentage due or to become due thereunder shall be retained by the said commissioners until the final completion and acceptance of the work herein stipulated to be done; and the said commissioners shall have the right to recover from the contractor whatever sums may be expended by the District of Columbia in completing the said contract in excess of the price herein stipulated to be paid the contractor for completing the same, and also all costs of inspection and superintendence, including all necessary traveling expenses connected therewith incurred by the said District of Columbia in excess of those payable by the said District of Columbia during the period herein allowed for the completion of the contract by the contractor, and the said commissioners may deduct all the above-mentioned sums out of or from the money or reserved percentage retained as aforesaid; and upon the giving of the said notice the said commissioners shall be authorized to proceed to secure the performance of the work or delivery of the materials, by contract or otherwise, in accordance with law.

11. *Payment.*—Payments will be made monthly, provided the progress of the work is satisfactory, less 10 per cent of each estimate, to be withheld until final payment; but 10 per cent of the cost of the work will be retained and invested as hereinbefore provided.

12. *Conveniences.*—The contractor shall provide, for use of the District inspectors stationed at paving plant, suitable office and testing room, with such plain furniture as may be necessary for the proper transaction of their business as agents for the District. They shall also furnish, when needed for use of laborers on line of work, necessary toilet conveniences secluded from public observation.

13. *Cleaning up.*—On the completion of work it shall be thoroughly cleaned before it will be accepted.

14. *Lines.*—All necessary lines and levels will be given by the engineer by means of suitable marks, and in establishing them the contractor shall provide such materials and assistance as may be required by the engineer. All marks given are to be carefully preserved, and if destroyed through carelessness the cost of replacing them shall be charged against the contractor at a fixed price of \$2 for each point, to be deducted from any money found due at final settlement.

15. All loss or damage due to negligence or arising out of the nature of the work to be done, or from any unforeseen or unusual obstructions or difficulties which may be encountered in the prosecution of the same, or from the action of the elements, will be sustained by the contractors.

16. *Interpretation.*—Any doubt as to the meaning of these specifications will be explained by the engineer, who shall have the right to correct any errors or omissions in them when such correction is necessary for the proper fulfillment of their intention. Whenever the word "commissioners" is used in these specifications it is understood to designate the Commissioners of the District of Columbia. Whenever the word "engineer" is used it is understood to designate the Engineer Commissioner of the District of Columbia, or, in his absence, his duly authorized assistants, assistant engineers, and inspectors representing him, limited by the special duties intrusted to them.

INSTRUCTIONS TO BIDDERS.

1. *Signature.*—Proposals must be signed by the bidder with the signature in full. When a firm is a bidder, the agent who signs the firm name to the proposal shall state, in addition, the names of the individuals composing the firm. When a corporation is a bidder, the person signing shall state under the laws of what State the corporation was chartered, and the name and title of the officer having authority under the by-laws to sign contracts. The proposal shall also bear the seal of the corporation attested by its secretary. Anyone signing the proposal as agent must file with it legal evidence of his authority so to do.

2. *Address.*—Post-office address, county, and State must be given after the signature.

3. *Prices.*—All prices must be written in words as well as expressed in figures. In case of variation the written prices shall govern.

4. *Identification of proposal.*—Proposals will be placed in a sealed envelope, so marked as to indicate its contents without being opened. This envelope will be placed in another addressed to the Commissioner of the District of Columbia, Washington, D. C.; if forwarded otherwise than by mail it must be delivered to the secretary to the Board of Commissioners.

5. *Rejection of bids.*—Reasonable grounds for supposing that any bidder is interested in more than one proposal for the same item will cause the rejection of all proposals in which he is interested. The commissioners reserve the right to waive any informality in the proposals received, and to reject any or all proposals, or parts of a proposal, and to make the award in such manner as they consider best for the interests of the District of Columbia. Proposals received after the time advertised for opening bids will be returned unopened. No proposal will be accepted from any failing bidder or contractor known as such on the records of the District of Columbia within 20 years prior to the date of bid. No telegraphic proposal will be considered.

6. *Experience.*—Bidders must present satisfactory evidence that they have been regularly engaged in the business of constructing such work as they propose to execute, and in case the lowest responsible bidder has never done any work for the District of Columbia, he must, prior to the award of contract, be able to show work done by him within a distance of 1,000 miles from the District of Columbia, and may be required to pay the necessary expenses of an inspection of such work by such representatives of the District of Columbia, not exceeding two in number, as may be sent by the engineer to examine it.

7. *Site of work.*—The bidder is expected to examine the site of work before bidding, as no allowance will be made for any unusual difficulties which may arise, either affecting the original construction or maintenance of the finished work.

8. *Capital and plant.*—Bidders must present satisfactory evidence that they are fully prepared with the necessary capital, materials, and machinery to conduct the work to be contracted for to the satisfaction of the commissioners, and to begin it promptly when ordered.

9. *Guaranty deposit.*—Bidders will inclose a receipt of the collector of taxes of the District of Columbia for the amount named in the form of proposal as a guarantee of good faith, and as reasonable fixed and liquidated damages, and not as a penalty, to the District of Columbia, and which they agree to forfeit in the event of their failure to enter into contract, with good and sufficient sureties, within 10 days after notification of acceptance of their proposal.

10. *Return of deposit.*—Bidders' deposits will be returned on application to the chief clerk, engineer department, to unsuccessful bidders after award of contract is made and to successful bidders after execution of contract.

11. *Sundays or legal holidays.*—No work shall be done on Sundays or legal holidays, except in cases of emergency, and then only with the consent of the engineer, nor shall any work be done at night unless authorized in writing by the engineer.

12. *Changes.*—Changes, alterations, or interlineations must be explained by footnote in proposal.

13. *Withdrawals.*—If a bidder wishes to withdraw his proposal, he may do so before the time fixed for the opening, without prejudice to himself, by communicating his purpose in writing to the secretary to the board of commissioners, and when reached it shall be handed to him or to his authorized agent unread.

14. *Breach.*—No waiver of any breach of the contract shall constitute a waiver of any subsequent breach of any part thereof nor of the contract.

15. *Laws affecting public work.*—The attention of bidders is invited to the "Act regulating the retents on contracts with the District of Columbia, approved March 31, 1906; "

"That on all contracts made by the District of Columbia for construction work there shall be held a retent of ten per centum of the cost of such construction work as a guaranty fund to keep the work done under such contracts in repair, and that the terms of such contracts shall be strictly and faithfully performed. On contracts for the construction of asphalt, tar, brick, cement, or stone pavements the retent shall be held for a term of five years from the date of completion of the contract. On contracts for the construction of bridges and sewers the retent shall be held for a term of one year from the date of completion of the contract. On contracts for the construction of buildings, and other contracts for construction work, the retent shall be held until the completion of the work. All retents for one year or more shall be deposited with the Treasurer of the United States as now required by law."

Also the following clause of the act of March 3, 1887:

"That the Treasurer of the United States, as commissioner of the sinking fund of the District of Columbia, shall not be compelled hereafter to invest money retained from District contracts hereafter entered into; but may, in his discretion retain said funds without interest, or invest the same in any class of United States or District of Columbia bonds, at the request and at the risk of the contractor, whenever the sum retained on any contract shall reach the sum of \$100 or more; any sum less than \$100 shall be retained without interest as above."

Also to public act No. 82, approved February 28, 1899, relative to payment of claims for material and labor furnished for District of Columbia buildings, and to the public act relating to the limitation of the hours of daily service of laborers and mechanics upon the public works of the United States and the District of Columbia.

All laws and regulations of the United States and of the District of Columbia, especially in so far as they relate to the protection of life and property, are to be strictly observed.

16. *Eight-hour law.*—The following provision, made in accordance with act of Congress, public No. 199, approved June 19, 1912, is made a part of this contract:

"No laborer or mechanic doing any part of the work contemplated by this contract, in the employ of the contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work under a penalty for each violation of this provision of \$5 for each laborer or mechanic for every calendar day in which he shall be required or permitted to labor more than eight hours upon said work.

"It shall be the duty of the inspector or inspectors or other employees of the District of Columbia, upon observation or investigation, forthwith to make report to the Commissioners of the District of Columbia of all violations of the provisions of this paragraph and of said act, together with the name of each laborer or mechanic who has been required or permitted to labor in violation of the provisions hereof, the day or days of such violation and the amount of penalties accruing under the provisions hereof by reason of such violation. This sum shall be withheld for the use and benefit of the District of Columbia by the auditor of the District of Columbia out of any money due the contractor,

whether the violation is by the contractor or any subcontractor. Any contractor or subcontractor aggrieved by the withholding of any penalty as hereinbefore provided shall have the right within six months thereafter to appeal to the Commissioners of the District of Columbia, who shall have the power to review the action imposing the penalty, and in all such appeals from such final order whereby a contractor or subcontractor may be aggrieved by the imposition of the penalty hereinbefore provided such contractor or subcontractor may within six months after the decision of said commissioners file a claim in the Court of Claims, which shall have jurisdiction to hear and decide the matter in like manner as in other cases before said court."

Nothing in this provision shall be construed to repeal or modify the act of Congress relating to the limitation of the hours of daily service of laborers and mechanics employed upon the public works of the United States or the District of Columbia, approved August 1, 1892, as modified by act of Congress approved February 27, 1906, and June 30, 1906, and March 3, 1913.

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